THE ENGINEERING AND MINING JOURNAL.

WITH WHICH IS INCORPORATED

THE COAL AND IRON RECORD.

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THE ENGINEERING AND MINING JOURNAL

Is devoted to MINING, METALLURGY, GAS MAKING and ENGINEERING.

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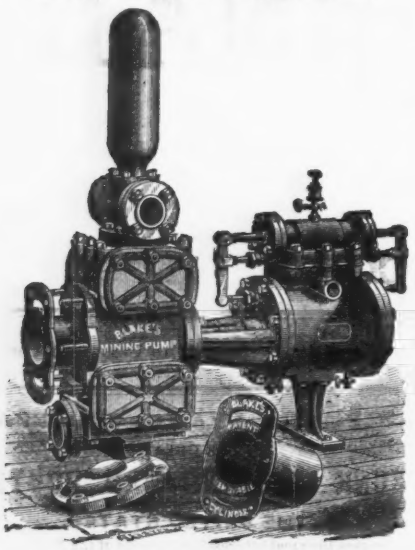

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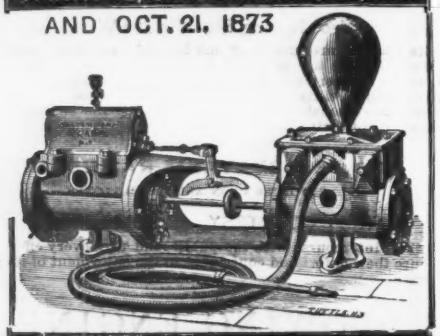

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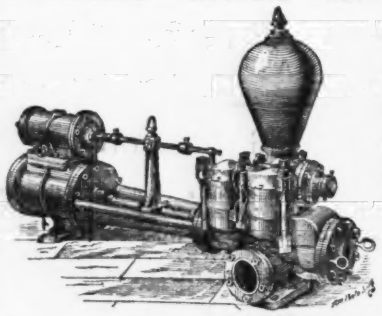

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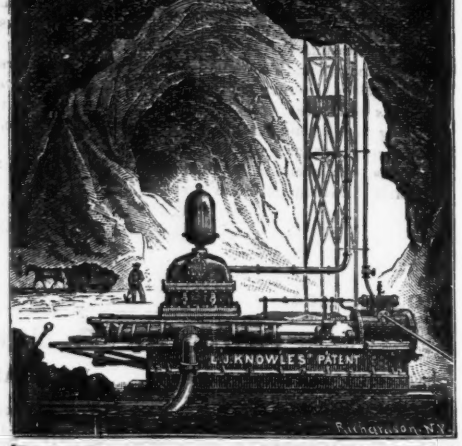

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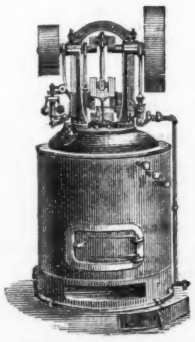

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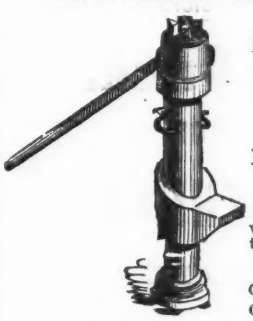

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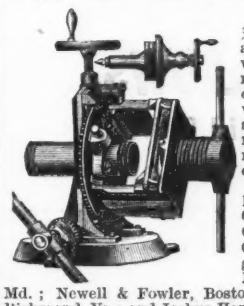

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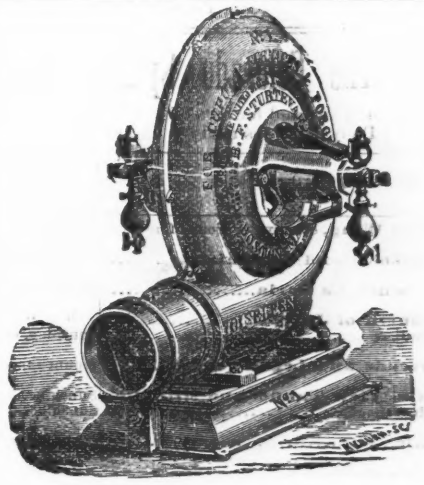

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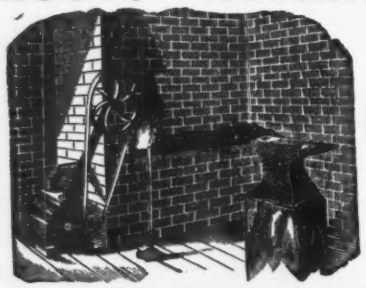

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THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E.
ROSSITER W RAYMOND, Ph. D. } Editors.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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Death of Benjamin Bannan.

WE regret to learn of the death, on the 31st ult., at the age of 68, of BENJAMIN BANNAN, so long the editor and proprietor of the Pottsville *Miners' Journal*. Mr. BANNAN was a man of strong convictions, and, like most earnest men, has left his mark upon the country. Having for nearly half a century published a paper in the busiest portion of the anthracite region, he early became identified with the coal trade, and for many years devoted much time and labor to the collection of statistics of the coal production of the country. He evinced remarkable ability as a statistician, and for years his were the only reports that gave any idea of the extent or importance of this industry. For the past few years failing health, and the sufferings from a painful disease have greatly interfered with his usual labors, and seem to have somewhat embittered him. Knowing his infirmity, we have not now, and indeed never had, any but the most friendly feelings personally towards the old man, who had done so much to encourage the development of the coal and iron trade of the country. We doubt if any man of his time has worked harder or has done more in this cause, and we honor his memory as of a benefactor to the industries to which this Journal is devoted.

Centennial Collection of Ores.

WE regretted to learn from the columns of the *Bulletin*, a few weeks ago, that the efforts of Mr. PEARSE, towards the collection of a fund for the exhibition of iron ores at the Centennial Exposition, have proved unsuccessful, and that the last Committee of the American Iron and Steel Association on that subject has been discharged. Why don't the Association discharge also its Scientific Advisory Board? We are informed that the members of the Association showed a great backwardness about subscribing for such a purely non-political purpose as the exhibition of ores and fuels. There seems to be even a vague impression that such an exhibition would damage trade—as perhaps, for some parties, it might indeed do. We are told of one heavy concern in Pennsylvania, which refuses to do anything for the Centennial, because it failed to get an expected contract for work on the buildings of the Exposition. Against such potent reasons as these, for the milk in sundry cocoa-nuts, the efforts of Mr. PEARSE were of course vain. He might have offered a contract for his cabinet-shelves; but that being consumed, he could have commanded no further inducements. Moreover, as the Committee rather naively confesses, a principal result, among outsiders, of the performances of the American Iron and Steel Association has been a strong preference on the part of States, public institutions and private individuals, to exhibit iron ores, fuels and fluxes for themselves, and not through the agency of the Association. That body has now at last followed the advice which we gave months ago. It has got out of the way. This wholesome step comes too late to permit any retrieval of the blunders committed in this case; but we are not without hope that in future the Association will be more likely to abstain from undertakings which only betray either its weakness or its lack of sincerity in representing the iron and steel manufactures of the country. Our ironmasters, looking upon the successive circulars and feeble demonstrations of the Association with regard to a simple matter like this, will decline to consider themselves "represented" by such incarnate dullness and inertia. *

Interchangeable Parts.

A SUGGESTIVE article in the *Iron Age* points out the great advantage which has been secured for numerous branches of manufacture by the adoption of the system of "interchangeable parts," that is, the manufacture (usually by machinery) of each part of a machine or other finished product, according to a fixed pattern, and with "division of labor," and the subsequent union of the parts to a finished whole. The result is great facility of repairs, any part being easily replaced at any time. The writer of the article referred to attributes the origin of this system, which has, as he justly remarks, revolutionized the manufacturing industry of the world, to the inventions of THOMAS BLANCHARD, nearly fifty years ago, for turning gunstocks and finishing gunbarrels in a lathe. The principle of the separate manufacture of parts has since been carried into the manufacture of sewing-machines, watches, steam-engines, etc., and is extending rapidly through all trades. It involves larger capital, a larger market, and a smaller or more specialized skill on the part of the workman. In other words, it is a characteristic element of modern mechanical progress; and the inconvenience which it temporarily inflicts upon some of the laboring classes is amply compensated by the benefit which it confers upon all. No doubt, the introduction of machine-made watches with interchangeable parts was at first a serious injury to those watchmakers who had laboriously acquired the skill required to make all parts of a watch. But the result has been a vast increase in the number of watches worn; and a corresponding gain in comfort and convenience to the whole of mankind.

We fancy the origin of this principle can be traced much further back—say, at least, as far as the invention of printing from movable types. It was not merely the cheapening of books and the diffusion of knowledge which that discovery inaugurated, but also the use of interchangeable parts in manufacture. There is no better illustration of it than the manner in which types are combined to form pages, these are stereotyped, and from the plates so formed thousands of sheets are printed, to be bound together into books. *

Eames' Improvements in the Burning of Petroleum as Fuel.

THOSE who are familiar with the elaborate experiments made by the French Government, and by Chief Engineer ISHERWOOD for the U. S. Government, some years ago, to find some simple, practical and economical method of using petroleum as a steam generator, and the enormous advantages that were claimed for its adoption, will agree with us in our admiration for the ingenious simplicity of the apparatus by which Dr. EAMES has, as we believe, solved this important problem. The methods heretofore employed to volatilize petroleum previous to its combustion, and those by which it was sought to burn the oil either delivered directly in its liquid state, or in the form of vapor led through pipes into the combustion chamber, have been a continuous series of failures, from one cause or another; they were dangerous, or ineffective, or costly, and have almost all, we believe, been abandoned. Yet no one doubts the great advantage it would be to be able to use as a heat-generator a liquid having such latent capabilities.

In presenting to our readers the full and able report of Prof. WURTZ on this new, but thoroughly tried, method of accomplishing so desirable an end, we invite the attention, not only of our ironmasters, but of metallurgists in general, manufacturers and all others using fuel, to the very remarkable results attained by what promises to be one of the most important practical inventions of our fruitful times.

The very interesting fact found by Capt. SELWYN, and cited by Prof. WURTZ, that petroleum developed in burning even a higher calorific power than its composition appeared to make possible, must be attributed, in the first place, to our ignorance of the actual composition of petroleum, and, second, to our ignorance of the calorific power of its constituents.

When we say that the calorific power of carbon is 8080 units, Centigrade scale, as determined by FAVRE and SILBERMANN, we mean carbon as contained in wood-charcoal; for as the carbon is in a less condensed state, its calorific power increases, till, if we take the heat developed by carbon in its gaseous form, as determined in burning it from carbonic oxide to carbonic acid, it may be taken at 11,214 calorics. In the same manner the calorific power of hydrogen, taken in the gaseous form, is taken at 34,462; while in coals it is probably in a more condensed condition, in which it will have a lower heating power. It has been noted and explained in this manner, especially by SCHEURER-KESTNER and MEUNIER, by Dr. BRIX and others, that the heating power of many coals exceeds the aggregate theoretical heating power of their elements; and the same appears to be the case with regard to petroleum. But in this case, though we know from the elementary composition of a given petroleum that it is a hydro-carbon, we do not know the proportions of the several hydro-carbon compounds which enter into its composition; and as each of these has a different, and as yet very imperfectly known, calorific power, we think it by no means strange that experimental results should both differ from, and sometimes even greatly exceed, the theoretical heating power we have been accustomed to attribute to these mineral oils. Thus marsh gas, $C H_4$ (new notation), has, according to FAVRE and SILBERMANN, a calorific power of 13,063; while olefiant gas, $C_2 H_4$, yields but 11,858 calorics; and other hydro-carbon compounds, though containing the same relative proportions of carbon and hydrogen, have still lower heating powers. But even did we know the actual proportion of each of these hydro-carbons in petroleum vapor, we are yet totally ignorant of the chemical changes which may be effected in them by contact with incandescent steam. We conclude, therefore, that from a theoretical point of view, very much has yet to be learnt to explain the theoretical capabilities of petroleum as a fuel. At the same time, there seems nothing incredible in the practical results which are noted in Professor WURTZ's report.

In the experiments under discussion it would certainly be desirable and very interesting to know the amount of heat introduced in the steam-jet and the actual weight of the water evaporated in a given time; the amount of steam and of air required for the vaporization and combustion of a given amount of petroleum, and some other data essential to a full investigation of the subject.

The great central and all-important facts, however, stand out in bold relief, that in burning 30 gals. or 200 lb. of petroleum, per hour, Dr. EAMES has, in steady work, heated to a high welding heat 8 tons of wrought scrap per day and

has generated all the steam required to drive the rolls for the works ; that to do the same work would have required some eight times as much coal, and that the iron produced by the petroleum furnace is much superior to that made from the same stock in the ordinary coal fire. The management of the furnace is easier and the speed of heating, both in the furnace and boilers, very much greater when burning petroleum than when burning coal. These several advantages are precisely those noted by us (E. & M. J. Vol. XIX, page 477) as accompanying the use of natural gas at the Leechburg, Pa., Works, and they are due in both cases to the purity and *calorific intensity*, rather than the actual *calorific power*, of the gaseous fuel ; it is "the last degree that does the work," and the great economy is in the fact that a much more intense heat can be developed in a given space with this hydro-carbon fuel than with any kind of coal. In the matter of generating steam, the extraordinary results noted are undoubtedly largely due, as Prof. WURTZ suggests, to the fact of the heating surfaces remaining perfectly clean and free from soot and ash.

Few works are so situated as to be able to obtain a supply of natural gas as is done at Leechburg, but the marked advantages obtained there by the use of this fuel are now placed, by Dr. EAMES' simple invention, within the reach of all; and this will, we believe, exert a very important influence on our iron trade by enabling us to greatly improve the already high quality of American iron, while decreasing its cost; for these experiments seem to indicate that we have here a fuel not only purer, but cheaper than that possessed by "the most favored nation."

We commend, as worthy of note, Prof. WURTZ's admirable method of showing the fibre and homogeneousness of plate iron, as shown in the illustrations accompanying his report.

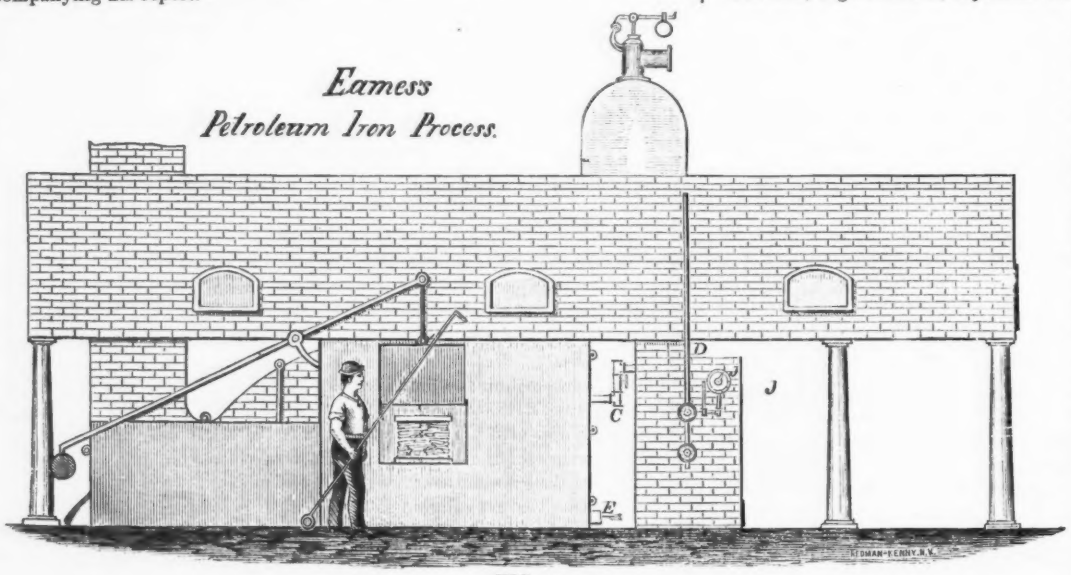


FIG. 1.

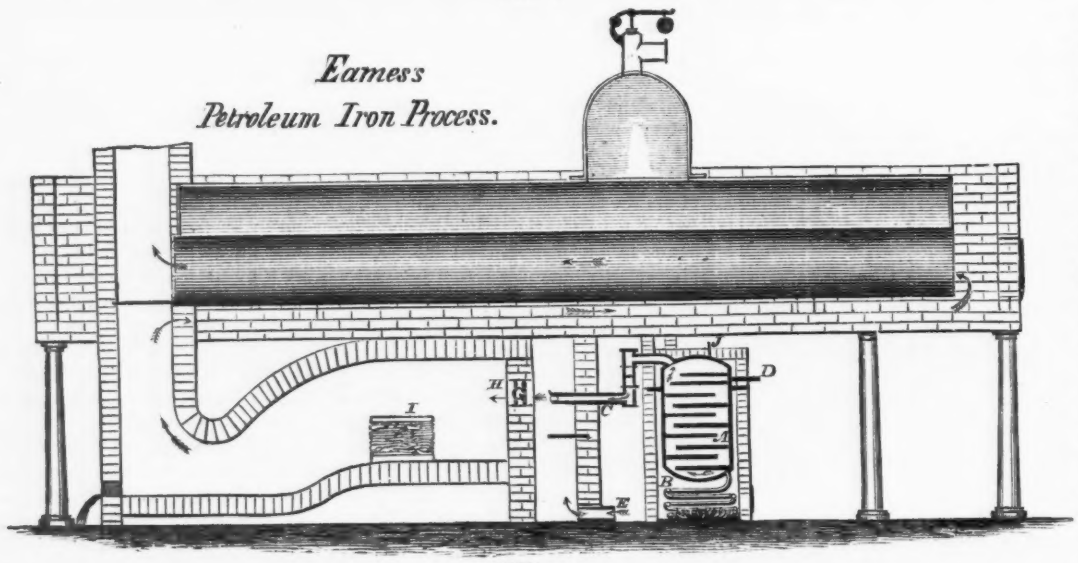


FIG. 2.

While we have been too long in the business to place much credit in processes that "are going to revolutionize" an industry which has grown out of so much study and careful investigation as the manufacture of iron, we have no hesitation in commending, as worthy of attention, this simple and ingenious device which promises to have a widely beneficial influence on our iron trade, now in a condition to welcome every improvement by which better quality and greater economy can be obtained. Nor do we think its application will end there. In locomotives, and in steamships, especially, it promises to be of service. We do not, however, see in this partial substitution of petroleum for coal anything to alarm the owners of coal mines; the consumption of coal, now over fifty million tons a year, will scarcely feel the loss of a fiftieth of its trade, and the cheapening of a product such as iron would so greatly increase its consumption, that the loss to the coal trade in one direction would be more than made up in another ; for, so far as we can now see, the use of coal in the manufacture of pig iron cannot be replaced by any other fuel.

Report upon the Eames System of Furnace-Working with Petroleum.

By Professor HENRY WURTZ.

HAVING been called on to examine and report upon the novelty, the principles, and the value of the system of Dr. C. J. EAMES of obtaining from crude petroleum simultaneously both the heat and the power needed for metallurgical operations upon iron, I have made several visits to his furnace, as operating in Jersey City, and examined critically the work there carried on, of piling and reheating waste scrap iron, and rolling it into boiler plate ; and have now the honor to report my observations and conclusions. In so doing, it is proper to say that this present report is not intended to cover all the *scientific* questions that arise out of the new system of firing furnaces and making steam with petroleum, some of which remain yet to be fully worked out ; but that I propose to restrict myself mainly to those points which are of immediate import to practical men.

1.—NOVELTY OF THE METHOD AND APPARATUS.

The cuts, Figs. 1 and 2, represent an ordinary reheating furnace for iron, such as the experiments were made with in Jersey City ; the form being by no means the best for developing the full merits of the new system, but answering tolerably well for the experiments made. Figure 1 is an external and Fig. 2 a sectional view. In Fig. 2, letters A B J D indicate the Eames vapor generator, called simply the "generator," the main feature of the new apparatus and process. A is a cast-iron vessel, with horizontal shelves projecting alternately from opposite sides, over which shelves the oil, entering at D, at the average rate —*for this one furnace*, when heating 3,000 lb. of iron at a charge, and making steam for the rolls besides—of 30 gallons or 200 lb., as a maximum per hour, flows downward in a thin layer, dripping from shelf to shelf. It thus meets a slow opposing current of steam heated to incandescence, and kept at a pressure of about 10 lb. per inch, and which passes upwards from the superheating coil B, enclosing the fire. *Every trace* of oil is taken up, and swept on to a mixing-chamber which occupies the former fire-space, where it meets the air blast entering at the point E (the former ash pit.) It will be observed that the former "bridge-wall" of the furnace is built up solid to the crown, except the space at H G, called the "combustion-chamber," an important and essential part of the Eames inventions. This consists simply of a cellular tier of fire-bricks placed on end, extending all across over the old bridge-wall. Within these cells the combustion begins, and it is found that if this combustion-space has a horizontal thickness of more than 18 inches, the fire-bricks *fuse down*. I is intended to represent one of the piles of scrap-iron, with its top and bottom "covers," of which, however, six, averaging 500 lb. each, are introduced at a charge, in regular working. The course of the flame under, and back through, one of the flues of the boiler above and thence into the stack, is sufficiently indicated by the arrows. This apparatus is covered by a series of patents, that for the generator being No. 132,266, of date Oct. 15, 1872.

2.—HISTORICAL.

Under this head great brevity is required, and only the most salient points can be taken up. Although many experiments have been made during about

ten years past, under the advice of many different inventors, in operating the furnaces of *steam-boilers* with petroleum, and my collection of the literature of this part of the subject is quite voluminous; yet, in operations on *iron*, such as these of Dr. EAMES, very little has been previously done, or, at least, published; and my inquiries have made me acquainted with but *two* series of practical experiments of any note: one of these having been in America and the other in England.

At the Laclede Iron Works, in St. Louis, experiments have been instituted under what was known as the "Whipple & Dickerson," or "Ambler Process;" but I have not been able to learn of any successful issue from these.

At the Chatham Dockyard, in England, in May, 1869, experiments were made, in heating armor and ship-plates with *American petroleum*. The general report made was that when 705 lb. of oil was used in heating a number of plates, preparatory to bending them, better results followed than when 31 hundredweight of coal was used on a similar lot. This will be more intelligible and more useful to us in another form. One barrel of crude petroleum=44 gallons, worth here at present prices $2.42, was thus proved superior in heating effect on these large masses of iron to 1280 lb. of English coal of best quality—doubtless, at least equal to a *first-class* American anthracite, worth here say $5.50 per ton, as delivered and stoked into the furnace; or $3.14 for the 1280 lb. These experiments were made without any special skill in handling the oil, and without apparatus adapted to its peculiarities, much *smoke* indeed having resulted, and having constituted an objection so serious as to have largely contributed to discourage further effort.

Certainly, then, these crude experiments must be looked on as highly encouraging to *us* on this side the Atlantic, where the material is much more available than in Great Britain.

3.—CHEMICAL PROPERTIES OF PETROLEUM.

A slight discussion of the chemical and physical nature and properties of our American petroleum will be a highly useful introduction to a practical discussion of this new process of utilizing it. Crude Pennsylvania petroleum is a mixture of a large number of compounds of carbon and hydrogen, of densities, boiling points, etc., varying among each other throughout a very wide range. According to one of our first authorities in the study of petroleum, Dr. VAN DER WEYDE, these different compounds, when once separated from each other, boil at temperatures ranging from that of ice up to 700° Fahr., or higher. Its *average* density is about 45° Beaumé, corresponding to a gravity of 800, water being 1000. Thus 1 U. S. gallon of water weighing 8·332 lb. avoirdupois, 1 gallon of average crude petroleum weighs 6·67 lb. Its composition is about as follows:

Carbon	84
Hydrogen	14
Oxygen	2
	100

The average latent heat of the vapor of petroleum has not been very satisfactorily determined, but it is known to be *very low*. Dr. URE states it at 184, that of steam being 1000, of alcohol-vapor 457, and of ether-vapor 313. That is, an amount of heat that will vaporize but 1 lb. of water, and about 2·2 lb. alcohol, will vaporize 5·4 lb. of petroleum (assuming no important change of *specific heat* during the change of state). By measure, the amount of heat or fuel that will vaporize 1 gallon of water should vaporize no less than 6¼ gallons of petroleum. This is an important practical point in this connection. The density of its vapor is very high, averaging, if the whole mass be converted into vapor, six and a half times the density of air at the same temperature. At 500° Fahr. it will all pass into vaporous form, except a trifling percentage, and as at that temperature air will weigh per cubic foot

$$\frac{565\times 492}{500^\circ-60^\circ+492}=298{\cdot}26 \text{ grains}$$

(565 grains being the weight of the cubic foot of air at 60°, and $\frac{1}{492}$ its co-efficient of dilatation for the Fahrenheit degree), then—if we admit for it the same co-efficient of dilatation as for air—petroleum-vapor at 500° weighs 1939 grains per cubic foot, and one gallon of petroleum should yield only 24·08 cubic feet of vapor of that temperature.

The specific heat of liquid petroleum is stated to be .4684, that of water being 1. The specific heat of its *vapor* does not seem to have been determined, but it probably will not greatly differ from that of the liquid. When boiled down, a tarry residue is always left, which, on raising the heat, chars and leaves a coke-like mass behind. This becomes also, in such cases as we have under consideration, a highly important matter.

4.—CALORIFICS OF PETROLEUM.

The heating power of Pennsylvania petroleum has been determined with sufficient accuracy for all practical purposes. For oil from Oil Creek, H. SAINTE-CLAIRE DEVILLE, experimenting for the French Government, in 1869, found a total calorific power of 9963 Centigrade units, equal to an evaporation of 16.17 lb. of steam per lb. of oil; and his actually-obtained yield of steam was 14.05 lb. per lb. of oil; 1252 heat-units, out of the 9963, by exact measurement, being lost in operating the chimney to produce draught, and 76 units by radiation, in all 1328, or 13.33 per cent. of the whole.

Another Pennsylvania oil, from Franklin, on French Creek, of higher density (*Huile lourde*), gave him 10,672 units in all; and Ohio oil, dense and black, gave 10,399. The first sample, from Oil Creek, doubtless represents about the average of the crude oil of commerce, and is hence adopted by me as a basis for calculation. As the total heat of complete combustion of carbon as charcoal—according to the mean of the figures of ANDREWS and of FAVRE and SILBERMANN—is 7990 units per lb.; Pennsylvania oil, therefore, may be practically rated as having just 25 per cent. more heat in it per lb. than (*chemically pure and perfectly anhydrous*) wood charcoal; or (supposing ash and condensed gases present equivalent to ten per cent. loss) 40 per cent more than common charcoal. The *theoretical* powers of the *best* British coals per lb. are estimated to be between 14 and 15 lb. of steam; but the British Admiralty, in a long-extended and elaborate series of experiments, found that the best *actual result*, from the best steam coals, was 9.5 lb. of steam per lb.; and *not more than eight pounds*, with ordinary coals. Experiments, by what was called the Dorset system, of making steam with heavy oils from Boghead mineral, were made at Woolwich in 1866-7, during 18 months. Steam-jets (*not super-heated*) were here used to convey these oils; 15 lb. of steam were made *on an average* per lb. of oil. The accounts show great general imperfection of operation and of combustion, with large production of soot and smoke; but the maximum result, when the combustion, as we may believe, was exceptionally perfect, was 17.8 lb. of steam per lb. of oil, which was even *above the full theoretical value of the oil!* With *perfect combustion* and skilled handling, we may safely adopt, as the actual steam value of our petroleum, *fifteen lb. of water made into steam by one pound of oil*—equal to just 100 lb. of water per gallon; 4,400 lb. per barrel, or 528 gallons of water vaporized by one barrel of oil, from 212° Fahrenheit. The maximum of 17·8 lb., of the Woolwich experiments above, may be, *in part*, explained by a somewhat greater inherent calorific capacity of the Boghead oil over petroleum. [Capt. J. H. SELWYN, who reported the Woolwich results, pointed out, as inexplicable, that this figure went clear beyond the total absolute calorific capacity of the material, estimated by the usual rules. I call attention to this, to introduce the true explanation of this fact, which, so far as I can learn, has never been given before. Carbon, like everything else, has a *latent heat of fusion* or of liquidity, though the amount of this is yet unknown. It seems probable that it is *large* in amount. In case of oil-fuel, we are clearly dealing with liquid or *fused* carbon, which, according to this view, should yield us more effective heat for equal weights than solid carbon in coal. This has been overlooked in the accepted modes of estimating the calorific effectiveness of liquid fuels, and they must have been underestimated accordingly.]

We must not rest satisfied, however, in the case we have in hand, with a valuation of the *steam-making* power only of our oil-fuel. In metallurgical work—certainly in *Siderurgy*—other considerations enter, of which it is very important we should gain a clear idea and appreciation. Above all things we need, in these cases, *concentrated heat*. This, indeed, has been the undoubted reason why many intelligent practical iron men have looked askant, and with no inexcusable incredulity, upon the use of oil in Siderurgy. Their very natural supposition has been that for producing *concentrated* heat, *solid fuel* was most suitable. Hence, I would here enter upon some slight considerations belonging to the Chemistry of Flame. Seventeen years ago, at a meeting in Baltimore of the American Association, in 1858, I presented a view, then so novel and having so little obvious *practical* bearing, that it has obtained no attention, but which now comes up with such direct and weighty practical application, that I shall be excused for reproducing the passage.* The subject under investigation was the *Flame of the Blowpipe*. The passage is as follows:

"An ordinary alcohol flame gives, with the blowpipe, a comparatively feeble heat. A gas flame is much superior, and a large *wax* candle gives probably a higher heat than anything else in common use. It occurred to me that the heating effect was dependent on the *density* of the burning vapor, or the quantity of combustible matter contained in the same volume. I therefore sought for combustibles having a higher density of vapor, and found that the *paraffine* of REICHENBACH, now known from the investigations of HOFSTAEDTER and FILIPUZZI to be a mixture of different hydrocarbons, was found by LEWY to have a vapor-density of not less than 11·8. By inquiry I found that candles composed of this or a similar material, obtained from the products of the distillation of the 'Breckinridge coal,' could be bought in New York. On procuring some of these and using them with the blowpipe I found that their flame was much hotter than that of the wax candle."

It will be scarcely necessary to add that I connect the intensity and concentration of the heat of the oil-flame with the *great density* of the oil-vapor, that I have above pointed out; and that I liken the flame of the Eames furnace, with unquestionable accuracy, to that of a *blowpipe*. In the case of coal-fires, including those with the so-called "gas-generators," as doubtless all will readily comprehend, the flame which is directed upon the hearth is essentially a flame of *carbonic oxide gas*, a gas whose density is just that of atmospheric air. Moreover, this carbonic oxide is already diluted with the nitrogen (equal to twice its own volume) of the air that has served to burn the carbon to carbonic oxide; so that, compared with the oil-vapor, far less combustible matter is contained in the same space, and if the oil-vapor were *pure carbon-vapor*, the difference in temperature might be very great. Much hydrogen, however, is present, to form water in its combustion, which takes up heat, as latent heat of steam; and to compare the theoretical temperatures of the flames requires quite complex calculations, that cannot be here entered into. If *exactly* the right amount of air for complete combustion could be introduced in the two cases, there would really be a small difference in the *final* resultant temperature of the *fully expanded* products of combustion, in favor of the carbonic oxide (that is, comparing, I mean, a pound of carbonic oxide, with a pound of oil). A vast difference is, nevertheless, actually found *in practice*, as in the experiments above with the blowpipe on paraffine-vapor. This is abundantly proved, in the oil-

* See the Proceedings of the *American Association for the Advancement of Science, for* 1858; page 176; also, Silliman's Journal (*Am. Jour. of Science*), vol. xxvii. page 24.

furnace, by the far *shorter time* required to heat up the hearth. When all things are fairly considered, and the facts recognized that are to be set forth below, resulting from the actual working of the oil-furnace, it will come to be admitted as entirely within bounds, to rate the practical siderurgic value of oil-fuel, when smokelessly burned, with the essential aid of the incandescent steam-jet through the generator of the Eames System, at *from seven to eight times its weight of the best coals*, (the latter being burned without a regenerator). As the average market cost of the oil ranges, weight for weight, even at this distance from the oil-centers, at less than three times that of coal, this rate of valuation proves it, as fuel for furnace-work, to be *greatly cheaper* than coal, in addition to the other advantages from its employment. This result is unexpected and astonishing, but altogether impossible of denial.

5.—SCIENTIFIC OPINIONS REGARDING OIL-FUEL.

Through the favor of Professor THURSTON, now of the Stevens Institute of Technology, I am permitted to quote some sentences from an unpublished MSS. work of his—embodying his lectures at that Institution, as well as at the U. S. Naval Academy, for a number of years past, which have here an interesting applicability. These will serve to demonstrate that gentlemen like the one quoted, who combine practical skill and training with scientific attainments of the first rank, have been fully prepared to accept and to welcome such developments as this one of Dr. EAMES. Professor THURSTON says, on the head *Liquid Fuels:* "The liquids best adapted for use as fuel are the mineral oils.

"They yield an intense heat; the products of combustion, as well as the fuels themselves, are comparatively free from deleterious elements; and the temperatures obtained by their use are easily regulated, when they are burned in manageable quantities.

"Capt. SELWYN, R. N., reported an average evaporative power from 212° F., of 16·77 lb. of water from 1 lb. of a liquid fuel, which had a theoretical efficiency of 17·52 lb. In another instance, he gives an evaporation of 14·98 lb. of water, from 212°, by a fuel having a theoretical evaporative power of 17·5.

* * * * * * * * * * *

"Experiments made by Engineer-in-Chief ISHERWOOD, U. S. N., under the direction of the U. S. Navy Department, upon various systems of utilization of petroleum as fuel, gave a maximum economy, over the use of anthracite, of 68 per cent., by FISHER'S method of burning oil; and of 38 per cent., by FOOTE'S process of using liquid and solid fuel together; and he reports the failure of another method, by reason of the obstruction of the tubes by deposition of solid carbon.

"ISHERWOOD states the advantages of the use of mineral oils, in his experiments, as follows:—

"(1.) A reduction of the weight of fuel, amounting to 40·5 per cent.

"(2.) A reduction in bulk of 36·5 per cent.

"(3.) A reduction in the number of stokers in the proportion of four to one.

"(4.) Prompt kindling of fires, and, consequently, the early attainment of the maximum temperature of furnace.

"(5.) The fire can, at any moment, be instantaneously extinguished.

"Other advantages, not here mentioned by ISHERWOOD, are the uniformity of combustion and of heating attainable, and the absence of ash."

Further on; under "Gaseous Fuel," Prof. THURSTON remarks:

"The advantages possessed by gaseous fuel are:

"(1) Convenience of management of temperature.

"(2) Freedom from liability to injure material with which the products of combustion may come in contact.

"(3) The facility with which thorough combustion may be secured.

"(4) The readiness with which the flame may be given either an oxidizing or a de-oxidizing character."

In another place, he says:

"The maximum temperature attainable in furnaces burning gaseous or vaporous fuels, when properly proportioned, is usually only limited practically by the heat-resisting power of the furnace walls."

BRITISH OPINIONS ON OIL METALLURGY.

A late editorial review of this general subject, in one of the most sterling of the great British technical journals, *Iron*, says, referring to the experiments at Woolwich and the Chatham Dock-yard, together with those made in France with locomotives:

"It is to be remembered that the fact of soot being produced in notable quantity is conclusive evidence of imperfect combustion, and therefore of bad arrangements. We all know the difference between a lamp so ill-constructed as to have a bad supply of air with a necessarily smoky and wasteful flame, and another which, receiving an adequate stream of oxygen, burns without a particle of smoke. Just so with a furnace. Again, a steam-jet is the worst possible means of promoting the combustion of the oil, as it must necessarily abstract a considerable portion of heat from the flame, and yet give no aid to combustion, other than by scattering the liquid into a spray. If used at all, the steam should be super-heated at about 1,000 deg. C."

This latter is precisely what is done in the Eames system.

Further, in reference to metallurgical applications, specially:

"Professor RANKINE, who devoted considerable attention to this subject, was definitely of opinion that nine-tenths of the theoretical efficiency might be looked for with hydro-carbon liquids as fuel. With a coal-burning furnace, it is requisite to pass at least double the quantity of air through the grate that would suffice for the chemical requirements of combustion, the surplus carrying to waste about 1200 heat units; yet even with this enormous volume of air, perfect combustion is not attained."

Further on:

"The obvious advantage of a system which would allow of fuel being consumed, with the aid of but a trifle more than the bulk of air sufficient to yield the oxygen required for the chemical exigencies of combustion, need hardly be insisted on. It would afford, on a large scale, the results which on a small one are yielded by the Bunsen burner; in fact, it would be impossible to devise conditions more favorable to complete combustion with a minimum of air. Add to this that oil has no ash, and that we have not the absorption of heat due to this cause, and as we have here to deal with very high temperatures, the proportional saving resulting from a limitation of the air-supply, combined with perfect combustion, would be far greater than in steam raising, while the margin for economy, even with regenerative furnaces, is enormous."

6.—SPECIAL REMARKS ON THE ELEMENTS OF THE EAMES SYSTEM.

We are now fully prepared to discuss, and to view with full comprehension the high and peculiar merits of the new system of oil metallurgy we are her called on to consider, and to appreciate its remarkable and precise adaptation in every point to the special qualities of the materials operated upon, and to the products sought after, in the special art of Siderurgy. The different parts of the apparatus may be taken up *seriatim*.

(*a.*) The *Vapor-Generator.* The plan and the setting of this are such as to secure a successive evaporation of less and less volatile hydrocarbons from the oil; the *residua* (of high boiling points, and those non-volatile without decomposition) ultimately reaching a horizon, on their downward flow, where the incandescent steam coming in below not only licks all that is vaporizable, but attacks also any carbonaceous residue, with formation of carbonic oxide and hydrogen gases. Thus, no incrustation or clogging of the generator can possibly occur, with petroleum free from ash, as our American oils ordinarily are. [This ingenious plan is so effective that I do not doubt the practicability of utilizing, by its means, our vast accumulations of *gas-tar*, at least in cases in which the presence of sulphur is not detrimental.]

(*b.*) *The Steam-Blast.*—In addition to the above described *chemical* functions of this—another function is to convey the oil, in vaporous form, into the furnace with sufficient velocity and pressure to mingle it forcibly and rapidly with the air-blast in the mixing-chamber. It would seem hard to suggest any more convenient or suitable agent for the purpose, or any simpler and more effective way of applying it, than here employed. The specification points out that the fire-space under the generator may be supplied with a portion of the waste-flame from the furnace-hearth; but it is to be remarked that this plan is not always so obviously desirable. An important element in the calculation here, is the fact that the *time occupied* in getting up a working heat on the cold hearth is reduced to so small a matter—but 35 or 40 minutes—that the necessity is by no means imperative of keeping the furnace in blast continuously, as with coal fuel; with which latter, in a furnace of this size, *twelve hours* is often required to get up a heat. Hence great advantage in case *repairs* are required; and hence, also, the advisability of a separate *fire-space* at least for the generator with its steam-superheating coil, which is then always available when heats are to be got up from the cold.

(*c.*) *The Superheater.*—The superheating of the steam-blast, in which Dr. EAMES has anticipated the editorial in *Iron*, as above indicated, is somewhat analogous to the heating of the air-blast of a blast-furnace. Such steam constitutes a vehicle of convection of the vapors, which cannot be sufficiently chilled afterwards, as ordinary steam would be, by the latent heat of vaporization of the lighter hydrocarbons, to allow of the condensation of the heavier hydrocarbons into a *spray*, which latter could not be sufficiently diffused throughout the air-blast to burn without smoke. It should be remembered that crude oil is a congeries of a great number of distinct compounds, some very volatile, like ether, and absorbing heat therefore very powerfully, while others differ diametrically in nature, inasmuch as while requiring nearly a red heat to vaporize them, they readily condense again, on the slightest fall of temperature. The eye of the skilled operative becomes a sensitive test as to these points, and the change of the character of the flame, when the steam-blast is insufficient, is perceptible enough, as I had occasion to observe in a case in which a *leaky* coil had been put in for a superheater.

(*d*) *The Air-blast.* In connection with this factor of the process, come in some of the most weighty considerations connected with the new system. I have already shown that the total vapor from *the whole* of a gallon of petroleum, supposed to be at 500° Fahr.—at which point none of the hydrocarbons should be present in the form of liquid spray, but all as homogeneous vapor—should occupy but 24·08 cubic feet of space. In this space, deducting the hydrogen corresponding to the two per cent. of oxygen, there are 5·603 lb. carbon which require 14·941 lb. oxygen, and 0·92 lb. hydrogen which requires 7·336 lb. oxygen, for complete combustion to carbonic acid and water; in all 22·277 lb. oxygen, equivalent to 1268 cubic feet of air. Each cubic foot of the petroleum vapor, at 500°, requires, therefore, for complete and smokeless combustion, not less than 52·6 cubic feet of air at 60°, which latter must moreover be mingled with it *perfectly* and *uniformly*. Below this proportion it is certain that a flame may result more or less fuliginous. Hence we learn two things—the necessity of an enormous supply of air to this furnace, and that this air must be injected with rapidity, and caused to move in currents as *sinuous* as practicable, to promote rapid and complete mixture with the combustible vapors. 30 gallons of oil per hour may be stated as a practical consumption for one of these re-heating furnaces, with a charge of 3000 lb. iron; that is, during the earlier chargings, after first getting up a heat; while this consumption will run down, *on continuous working*, to 25 gallons, or even less, per hour, by reason of proportional diminution of loss through conduction, when all the masonry has become heated throughout. This consumption of 30 gallons requires, for complete combustion, a minimum blast of 38,040 cubic feet of air per hour, or 10¼ feet per second. As some excess of air, however, is always necessary, we may probably put the minimum at 12 cubic feet per second. It will be obvious that by varying the proportions of steam and air to the oil, a wide variety and gradation of temperatures, flames, and effects, are producible. My object here is merely to point out that all these effects are producible and variable, at will and *instantaneously*, by the mere manipulation of cocks; and that they will be independent of thermometric, hygrometric, and barometric disturbances of the at-

mosphere, and even, to a certain extent, of irregularities on the part of the operatives. With equal skill on the part of the latter, very important and peculiar economies of fuel must result in various ways; one being that the losses that are always occurring with coal-fuel from transient, accidental, or irregular and inevitable excesses or deficiencies in the proportions of air to combustible, may be, and will be, almost entirely avoidable. It is well-known that in stoking a coal-furnace the best man will make twice as much steam from the fuel as the worst man, through the acquirement of a skill and tact in management of these points. In the case we are considering, these things will manage themselves.

(*e.*) *The Combustion Chamber.*—This is another admirable and most essential adjunct to the oil-furnace of EAMES. Recurring to what the editor of *Iron* says, as above quoted, about the reproduction on the large scale of the results of the Bunsen burner, it might be suggested that this combustion-chamber performs this identical function, and that the flame that results is, in a measure, like the Bunsen flame. It is only just, however, to add that the invention goes *much further* than this in the direction thus indicated; and it is more appropriate to liken the Eames flame to a huge *Vapor Blast-Lamp*, such as are even now in use, on the small scale, in some chemical laboratories; some of which are fed with petroleum-naphtha, and in which similar mixing chambers are essential. The proportioning of the dimensions of the combustion-chamber has been a matter of no slight trouble. When too thick it *melts down*, and when too thin, imperfect and streaky combustion results. Many troublesome experiments led to a thickness of *eighteen inches*, as the correct horizontal dimension.

(*f.*) *The Hearth.*—The management of the furnace-hearth, and of the iron thereupon, is a stage of the process where nothing can be substituted *wholly* for the skill and intelligence of the operative. The oil-flame, however, has, over any coal-flame, the immense advantages of purity, uniformity, and freedom from dust and ash. The eye of the workman soon learns to discriminate and judge of its character, quality and changes, with a certainty which must be much greater in the case of the oil-flame, by reason of its purity and invariability. The same advantages are found as in the case of the gas-furnaces, now so much employed in Siderurgy, of obtaining with ease, and maintaining, a *neutral flame*, which will not "cut" or burn the iron or steel; thus permitting a saving of *waste of metal*, which often is of even greater importance than saving of fuel.

(*g.*) *The Waste-Flame from the Hearth.*—This is, of course, utilized, as with a coal furnace, by passing around and through the flues of the boiler above, so far as it thus may be. It should, however, be indicated, that this is a case which must be justly regarded as peculiar, in admitting of the absolute using up of *all* the heat in the escaping gases. None need be left for draught, and the entire absence of soot and ashes should make it practicable to pass it through any kind of tubular apparatus, for heating feed-water, etc., by virtue of the latent heat of the steam present. The absence of dust, ash, and sulphur-acids in these products of combustion must lead to no small saving of erosion, corrosion and external incrustation of boiler-plates, tubes, and flues, which, with coal-fuel and a blast, constitute no trifling causes of damage and waste. Such surfaces, it would appear, ought to remain, but for some slight possible o... tion, perfectly clean, thus retaining also greater steam-making efficiency. In the cases, hitherto, of experiments for steam-making with oil-fuel, the most frequent, indeed, I believe, universal trouble—the veritable *bête noire*—has been soot and smoke; things which, in the Eames system, appear to become so manageable, that in all my visits I have not yet witnessed a *visible* exhalation of smoke from the stack of the furnace. It is doubtless due to this cleanness and purity of the flame, that so large a proportion of the heat is abstracted from the products of combustion by the boiler, that when 30 gallons of oil per hour were burning in the furnace, and the temperature on the hearth ranged at 3300° Fahrenheit and upwards, a Tagliabue pyrometer, inserted in the flue immediately above the boiler, ranged only from 320° to 350° Fahrenheit, averaging 335°. With ordinary fuel, 600° to 700° is not an unusual temperature for such chimney-gases.*

7.—THE TEMPERATURES OF THE PETROLEUM-FURNACE, AND STACK.

The temperature of the fire-space or hearth, of the oil furnace was determined by the familiar method of POUILLET, by heating therein a weighed block of iron and then plunging the same into a weighed quantity of water of known temperature. The weights of iron and water, the initial and final temperatures of the water, and the known (very different) capacities for heat (or *specific heats*) of water and iron, as 1000:112,† furnish the *data* for very simple calculation of the temperature of the flame. It happened by good fortune, that on the day selected for these experiments—the last day of running of this furnace, July 16, 1875—Mr. ROTHWELL, of the editorial staff of the ENGINEERING AND MINING JOURNAL, was present, and, at my request, verified the weighings and calculations. The first experiment, with all proceeding in fair order, (though the furnace was not considered to be doing its best), the iron weighing 5.2957 lb. and the water 20 lb., the initial and final temperatures being 75.°5 and 174° F., calculates to 3321.°5 F. Before the second one was obtained, the furnace—an old one and out of repair from the outset of all these experiments—was giving out; a considerable part of the crown having *fallen in*. The second weights were 7.51 lb. iron and 25 lb. water, and the temperatures 75.°25 and 184°. This calculates to 3232° F. The errors (loss of heat, etc.,) were all *against the furnace*, and all the experts present agreed in the conclusion that a heat of 3500° Fahr. could undoubtedly be obtained with this flame in a properly constructed furnace in good working order. To give an idea of this temperature, it may be stated that the greatest heat obtainable in the iron blast-furnace, according to BECQUEREL, is 3300° Fahr. Cast iron (same authority) melts at 2786° F.; steel, somewhere above 3000°; but authorities differ largely on this latter point, which must be considered as still unsettled.

The temperature of the chimney-gases, after passing the boiler, was on this day lower than usual, ranging from 320° to 330° Fahr., indicating, doubtless, a lower initial temperature of the fire-space than previously, due to the increasingly bad condition of the furnace. The temperature of the air having been 80°, the proportion of the total heat produced, that was being utilized and saved in this furnace, is easily calculated. Taking 3300° as the maximum heat, and 325° as that of the chimney, this proportion is equal, by an obvious formula, to:

$$\frac{3300-325}{3300-80} = .9239$$

or 92.39 per cent. of the total heat, as the saving in this operation. This i a very large proportion. If we now, in round numbers, allow 10,000 Centigrade units as the total calorific capacity of the oil, from DEVILLE'S actual determination, = 18,000 Fahrenheit units; we can easily calculate how much *steam* should be made by this furnace, when carrying also its full load of iron; that is, if we make one arbitrary allowance of 5 per cent. loss for one small unknown factor, namely, the sum of the latent heat of fusion and specific heat of the *slag*. In this case, we have no allowances to make, as with coal, for imperfect combustion and specific heat of ashes and cinders. 200 lb. of oil per hour=a total heat of 3,600,000 Fahr. units; 92.39, minus 5 per cent. for the slag, or 87.39 per cent. of this = 3,146,040 units. The specific heat of iron being taken at .112, to heat the 3,000 lb. of iron to 3,000°, takes 336,000 units, and there is left for steam 2,810,040 units per hour. Taking the heat of steam from water at 80° F.* as 1148 units, there must be 2447 lb. of water converted into steam per hour; or, assuming 1 lb. best anthracite burned directly under the boiler equal to making 8 lb. of steam, we have here in the waste heat of one petroleum furnace, heating also 3,000 lb. iron, the equivalent of 306 lb. of coal burned per hour, or, 408 lb. every 80 minutes, *directly under the boiler*. It is no wonder, then, that *with one furnace* the result, so surprising at first sight, is obtained of steam got up every 80 minutes for running six large boiler-plates through the heavy rolls. It is fair to remark that to do this required *two* coal furnaces, the rolls and fly-wheels being much *out of level*, and running very hard. These figures are very satisfying, as they *fit well* with the actually observed work of the oil, and amount to a chemical and mathematical demonstration of the immense value of this invention.

8.—THE CHARACTER AND QUALITY OF THE IRON.

The special tests that have been made, in the Oil-Furnace operated on the Eames system, in Jersey City, have been chiefly of one kind; selected because deemed to furnish the *severest* general test that could be devised—namely, the piling of refuse scrap-iron, for re-heating and rolling into boiler iron. The material thus employed has been chiefly composed of fragments of old, worn-out boilers, many pieces having the boiler-scale still adherent—no means being employed to detach it. This boiler-scale being largely *sulphate of lime*, with *phosphates*, etc., nothing could be introduced into a furnace seemingly better calculated to frustrate all efforts to weld the mass again into any useful condition of coherent lamination. Hence a frequent remark of experts, that if the petroleum flame would make this stuff into anything useful, we might expect *everything* from it. The figures of Professor THURSTON'S tests of the plate, given below by him, cannot but be regarded as very remarkable.

MECHANICAL LABORATORY, DEPARTMENT OF ENGINEERING,
STEVENS INSTITUTE OF TECHNOLOGY,
HOBOKEN, N. J., July 31st, 1875.

Professor HENRY WURTZ:

SIR:—We send you herewith the records of the tests recently made, in the Mechanical Laboratory, of specimens of iron made by the Eames process from mixed scrap, and marked No. 430 to 436, consecutively.

The specimens numbered 430, 431 and 432 were, by some mistake, sent us with square corners, and tore apart at those points of weakness before reaching their maximum resistance to tension. We are, therefore, only able to give their successive stresses and extension within the limit of ultimate resistance.

The remaining specimens were properly shaped, and the results given may be regarded as accurate. The densities were very carefully determined, and are valuable as indicating the specific gravity of this peculiar quality of metal.

The results of these tests of scrap boiler plate, and the inspection of the fractured specimens, indicate that the method of heating and working adopted by Dr. EAMES secures a very perfect elimination of impurities and consequent uniformity and perfection of weld.

The proof strain is unusually high, and this, with the specific gravity recorded, indicates, I should conclude, great homogeneity and compactness of material.

Such high proof stress is rarely observed in boiler plate. I should suppose that such metal would make good fire-box iron, but should hesitate to recommend a mixed scrap plate for that purpose until after extended trial.

The ultimate strength is quite up to the average of boiler plate, and exceeds that of a large proportion of the iron usually found in market; it is satisfactory as the result of re-working such scrap as was used here.

The extension is much less than is obtained from the more ductile and softer irons, but specimens 434 and 435 show that even this hard scrap plate may be given a fair degree of extensibility.

No. 433, which is a piece of plate made from the bloom by this same process,

* The pyrometer here used was borrowed from Prof. THURSTON, being one used and relied on by him.

† This is a figure for the specific heat of iron used by Prof. THURSTON. It is a trifle lower than some other authorities, but he believes it more reliable.

* There was no heating of feed-water on this day, nor at any time during these experiments; the apparatus for the purpose being dismantled. All the water was pumped into the boiler cold, on all occasions.

and introduced here for comparison, shows the same peculiarities of structure and of resistance, and indicates those peculiarities to be characteristic of the product of this method of working.

The successive extensions, as the load was increased, indicate well the behavior of the metal under loads exceeding its limit of elasticity.

I regret that I have had no opportunity to examine iron made by this process into bar, or metal of a higher grade originally. The specimens furnished being all of thin plate, they could not be tested in the autographic machine, and we cannot, therefore, furnish strain-diagrams produced automatically.

It gives me pleasure to be able to state that I have been very favorably impressed with the arrangement adopted by Dr. EAMES The work done by his process is very satisfactory, so far as I have been able to observe.

The main principle of using a gaseous fuel, derived from a liquid hydrocarbon, has been one which I have, for many years past, urged as one of the most promising methods of securing a flame of high temperature and of great purity—such as is needed in the production of fine grades of iron.

I should regard its commercial success as one of the most promising features of metallurgical progress. Very respectfully,

(Signed) R. H. THURSTON.

RECORDS OF TESTS BY TENSION, OF IRON MADE BY THE EAMES PROCESS.—MECHANICAL LABORATORY, DEPARTMENT OF ENGINEERING, STEVENS INSTITUTE OF TECHNOLOGY.

MATERIAL: ROLLED IRON—INVESTIGATION OF TENSILE STRENGTH.

NAME.	Laboratory No.	Original Mark.	DIMENSIONS, ORIGINAL AND FINAL. Length. L, L'	Breadth. B, B'	Depth. D, D'	STRESSES. Proof.	Ultimate.	PROOF LOAD PER SQ. INCH AREA OF Original Section. P	Fractured Section. F'	BREAKING LOAD PER SQUARE INCH. Original Section. T	Fractured Section. T'	EXTENSION. Actual.	Ratio to Original Length.	Ratio to Original Diam.	Specific Gravity. S. G.	MODULUS OF RESILIENCE. W
Iron made by Eames Process.	430	W	4.93	0.76	0.35	7860	....	29550	37207	....	.....	0.256	0.052	0.336	7.53	.....
" " "	431		5.19	0.652	0.324	...	....	.....	.....	.....	.....	.....	...	....	....	.....
" " "			5.00	1.00	0.27	9270	....	34333	49342	....	.....	0.325	0.065	0.325	7.72	.....
" " "			5.325	0.982	0.234	....	....	.....	.....	.....	.....	.....	....	....	....	.....
" " "	432		5.62	1.5	0.175	7245	....	27600	28674	....	.....	0.113	0.020	0.753	7.65	.....
" " "			5.733	1.469	0.172	....	....	.....	.....	.....	.....	.....	....	....	....	.....
Charcoal Iron for comparison.	433		4.5	0.635	0.401	8670	....	34049	48635	....	.....	0.05	0.011	0.078	....	.....
" " "			4.55	.....	.....	....	....	.....	.....	.....	.....	.....	....	....	....	.....
" " "			4.05	....	....	10000	....	39272	55403	....	.....	0.15	0.033	0.236	....	.....
" " "			5.0	0.573	0.315	12000	....	47126	66484	....	.....	0.50	0.111	0.78	7.73	4067.1 ft.-lb.
Iron made by Eames Process.	434		4.5	0.625	0.400	13995	13995	.....	40086	54961	77537	0.50	0.111	.....	.....	.....
" " "			4.63	....	....	8390	....	33560	47778	....	.....	0.13	0.029	0.207	....	.....
" " "			4.88	....	....	10000	....	40000	57334	....	.....	0.38	0.084	0.608	....	.....
" " "			5.08	0.575	0.364	12000	....	48000	.....	50280	66057	0.58	0.128	0.928	7.72	4290.6 ft.-lb.
" " "	435		4.5	0.975	0.277	12570	12570	.....	37665	.....	.....	0.10	0.022	0.102	....	.....
" " "			4.6	....	....	8000	....	29621	47081	....	.....	0.23	0.051	0.235	....	.....
" " "			4.73	....	....	10000	....	37026	50497	....	.....	0.63	0.140	0.646	7.70	4748.3 ft.-lb.
" " "	436		5.13	0.900	0.236	12000	....	44432	.....	50874.7	64689	.....	.....	.....	.....	.....
" " "			4.5	0.465	0.18	13740	13740	.....	35148	.....	.....	0.08	0.018	0.172	....	.....
" " "			4.58	....	....	8335	....	31608	42169	.....	.....	0.17	0.037	0.395	7.67	1066.4 ft.-lb.
" " "			4.67	0.420	0.167	10000	....	37922	....	43231	48452					
						11490	11490	....	....							

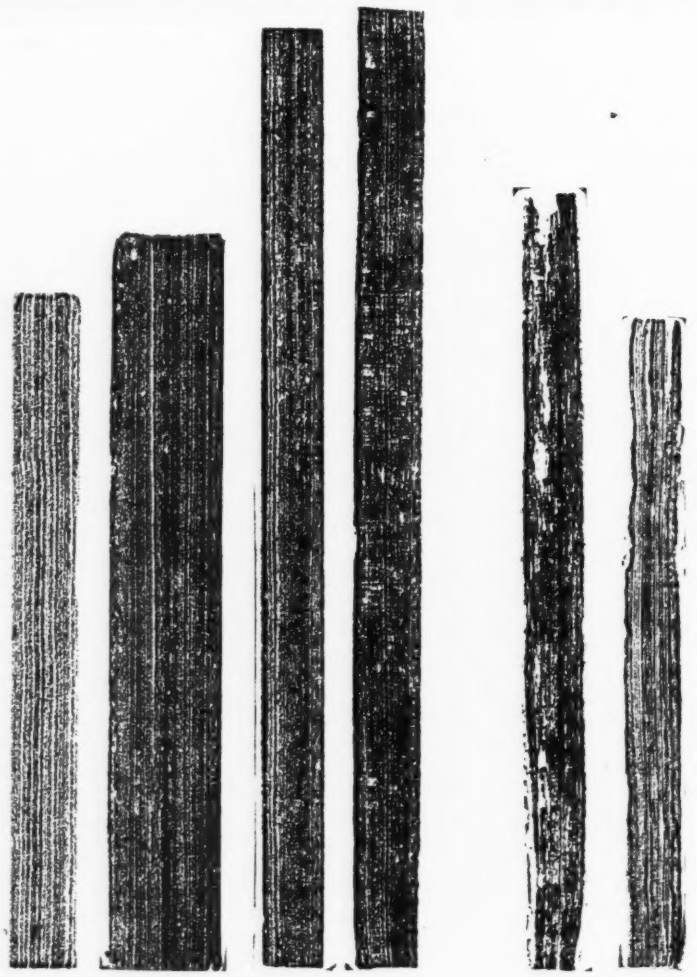


Fig. 3.—Prints made directly from the laminæ of Boiler-Plate, developed by etching, by Professor HENRY WURTZ.

It was thought advisable by me to endeavor to supplement Professor THURSTON's tests by some experiments to develop the uniformity and homogeneity of weld and lamination, obvious to all experts, produced by the petroleum flame; and I determined, therefore, to attempt to make the iron *put itself on record;* a thing which has not, I believe, been accomplished before, except in cases of *cast-iron* specimens. I succeeded very well in etching polished edges of the sheets so as to obtain electrotypes from them, and the results are herewith presented in figure 3. The impressions lettered A, B, C and D are from the petroleum-iron, and E and F from clean, selected pieces of the best of the used boiler-scrap, from which the piles were made up. [The unsoundness and really frightful internal irregularities developed in these latter pieces of plate have surprised me much, even considering that it came from a worn boiler, and I much desire to make further examinations of *new* commercial boiler-sheet by this method; a method of testing which, I would submit, should be universally practised, now that its utility has been made so manifest. It will be of interest to add that the irregularities developed in the pieces of broken boiler-sheet by the etching were scarcely, if at all, visible to the eye on the polished edges of the specimens, before the corroding agent was applied; the surface being quite passably sound and uniform. This makes the result of the etching operation more remarkable. My supposition is that the irregularities were developed by the existence of imperceptible fissures, due to lack of original perfect welding, into which the corroding liquid penetrated, and could then eat out on both sides, as can be readily understood.]

9. FURTHER FACTS AND FIGURES; ECONOMY, ETC.

It was quite easy to determine with precision, with the arrangements at Jersey City, the relations of consumption of oil to iron produced, and time, labor, and material occupied, in any special case. The oil was fed from a tank sunk in the ground, which had a horizontal section throughout of four feet square. Each inch in depth, therefore, corresponded to 2,304 cubic inches, or, closely enough, to *ten U. S. gallons* of 231 cubic inches. By gauging with a graduated rod each hour, therefore, the hourly consumption of oil was readily followed up. It was thus determined by me that, starting with a cold furnace and boiler full of cold water, forty-five minutes was a maximum time, with oil fed at the rate of 30 gallons per hour, or 22·5 gallons in this time, to bring the whole fire-space to a dazzling white heat. Six piles of scrap, averaging 500 lb., or 3,000 lb. in all, being then introduced, 35 minutes more, at the same rate of consumption, not only brought the piles to a high welding heat, but raised the steam in the boiler to 90 pounds pressure, being that required

to operate the rolls. The time required, after the furnace was heated and steam up, for each charge of 3,000 lb., averaged, at most, eighty minutes; and, as the brickwork became heated throughout, it was apparent that the feed of oil might be somewhat diminished, as will be readily understood. Thus, in a working day of ten hours, just *seven* such charges could be worked off, averaging 2,500 lb. of rolled iron each; total, 8 tons per day of boiler-sheet from one such furnace, with an average consumption, as a maximum, of 30 gallons (200 lb.) of oil per hour, or 300 gallons (2,000 lb. in all), worth, at present prices, $16.50. To this must be added, however, the fuel used under the generator and small supplementary boiler, which together was 500 lb. per day, worth, say, $1.20, and making $17.70 for fuel per day in all, or $2.22 per ton of finished sheet. [It is admissible that one generator and one small boiler will operate several furnaces, the inventor says *five*. If we say *four*, it will diminish the small addendum of cost; and it is, therefore, fair to say $2.10, as a maximum fuel cost per ton of sheet.]

As to working this furnace with coal, it was ascertained from the testimony of the operators (taken under oath, at my request) that by keeping up the fire all night, so that a heat could be had at a reasonable time in the morning, the maximum product of finished sheet might be, with superior work, allowing ninety minutes for each heat, *six tons*,* with a consumption of at least 5½ tons of coal = 12,320 lb., or 2,053 lb. of coal per ton. This coal, rated at $5.50 per ton, *in the fire*, would be a fuel-cost of $5.04 per ton of iron, as against $2.10 for oil.

To get the comparative effective work per lb. of oil and coal, we must deduct from the 2053 lb. coal per ton of iron the coal used in making the petroleum iron, in the two small extra fires—63 lb. per ton, which brings it down to 1990 lb. coal against 250 lb. oil per ton, or a ratio of 8 to 1; justifying my maximum estimate in a previous paragraph, at least for this special kind of siderurgic work, on an ordinary furnace-hearth.

As the effective work of coal is nearly doubled by the use of the Siemens regenerators, this disparity must, in that case, be reduced one-half; this still leaving a clear margin of economy of cost of just 20 per cent. in favor of the oil; but considering the heavy cost of the Siemens or Siemens-Martin plant, and the comparatively trifling cost of that of Eames, this latter comparison is far from being a just one. There can be no advantage with the gas furnaces and regenerators on the score of "cutting" the iron, as the same elements of purity and manageability of the flame exist in each.

I have in hand statements from the inventor, made at my request, as well as *sworn* statements and estimates, made also at my suggestion, by the furnacemen,† which I desired to compare with my own estimates and figures as above. I do not find enough substantial variation to justify in my mind the occupation, on this occasion, of space with these documents. The general tenor of those of the men is rather more in favor of the oil side of the question than I have made it above. One statement made for me (also, at my request, under oath) by the *Engineer*, CHARLES J. BENNETT, of Jersey City, a man of much intelligence, I must not fail to quote. On one occasion in February last "steam was raised to a pressure of 90 lb., with oil, in 2 hours—the brick work enclosing the boiler being *coated with ice* in places 2 inches thick—from cold water." His previous experience with coal, which he adds, is that "under the same circumstances, it would have required between 6 and 7 hours, and the consumption of from 2½ to 3 tons of coal to accomplish the same object." Mr. BENNETT being deemed a thoroughly reliable man, and having made this statement for me with care and deliberation, we shall be forced to admit here, if we take the statement as it stands, that in heating up and steaming up a cold furnace and boiler, the maximum feed of oil possible in two hours being, say, 70 gallons, or 467 lb, (which I was told by the foreman was as much as could be burned well in the time) this has not only done the work here of at least 2.5 tons—5600 lb. of coal—that is, making 1 lb. oil=12 lb. coal—but has done it in less than one-third of the time; making a pound of oil the effective equivalent in this case of some 36 lb. of coal. This can only be believed by admitting a waste or effective loss of at least 90 per cent. of the coal, through imperfect combustion or other causes under these special (and of course exceptional) circumstances.

10.—PUDDLING, ON THE EAMES SYSTEM.

Not having personally witnessed the experiments which were made a year or more since, in Providence, R. I., in which the Eames generator was applied to an ordinary puddling-furnace, I can but incorporate statements of others relative to this work. The following statement is authorized and its accuracy vouched for by Dr. WM. F. CHANNING, and C. H. PERKINS, Esq., well-known and highly esteemed citizens of the city of Providence:

"The experiments in puddling at the Horse Shoe Works were very satisfactory, the material used being old cast iron scrap. Each charge, weighing 500 lb., was converted in about 45 minutes, consuming about nine gallons of petroleum. Mr. BELL, before a recent committee on coal in the English House of Commons, estimates that five and a half tons of coal are required to produce one ton of finished iron from the ore. The American estimate is usually six tons of coal, nearly three tons being consumed in the blast furnace, and at least one and a half tons in the puddling furnace, to every ton of iron."

Other experiments were made at these works in "busheling" scrap iron. In reference to these, the following statement is authorized by the same gentlemen:

"The time usually required to heat a bushelling furnace, from the cold, with coal, at the Rhode Island Horse Shoe Works, may be stated at seven or eight hours, after which four heats an hour can be obtained. With the petroleum vapor, the furnace could be heated from the cold in about thirty-five minutes, after which six heats an hour could be obtained, and six balls produced, weighing about 175 lb. each, or an hourly production of 1,050 lb. of iron.

"The amount of petroleum consumed in doing this work averaged about twelve gallons an hour. About 500 lb. of anthracite were burned per day under the generator and super-heated during these experiments with a single furnace; but, as the generator was large enough to supply five furnaces, it is estimated that 150 lb. of anthracite per day would be sufficient to vaporize and convert the petroleum required for each one of several furnaces. It commonly takes one ton of Cumberland coal in the bushelling furnace to produce one ton of iron. The cost of Cumberland coal, at the works, averages $8 25 per long ton. The petroleum used in the experiments cost 5 7-10 cents per gallon, delivered in Providence, and the anthracite used under the generator cost $6 25 per long ton.

"For the petroleum process only two men instead of three are required at the bushelling furnace. No cleaning of the bars or wheeling of ashes are required. The furnace used in the experimental tests remained clean and free from dust. The iron produced was cleaner than when coal was used.

"In working on the large scale, a single man would manage the generator and superheater for the whole works, as well as, in this instance, for a single furnace.

"Three charges of *thin* wrought scrap were weighed before and after "heating" with petroleum, by Messrs. C. H. PERKINS and R. W. COMSTOCK, Superintendents of the Horse Shoe Works, showing a loss of only thirteen per cent. in welding and balling; while with the same thin scrap, in the common process at the works, the loss is estimated at twenty-five per cent.

"The petroleum iron, thus produced, in billets, was softer and finer than that made by the common process.

"It was observed, at the works, that the gases of combustion from the petroleum furnace carried more heat, and were worth more for their final use of making steam under the steam boiler, than the gases of combustion from the coal furnaces."

11. BRIEF REMARKS ON PETROLEUM-TRADE, AND PRODUCTION.

The astonishment of the world at the stupendous history and progress of the American mineral-oil production has as yet scarce subsided; and, in view of the fact that some still hold to the notion that it can be but an ephemeral thing, a bubble that may at any time collapse, it might be well to cite a few figures, to prove how baseless this notion is, and how solid the foundation on which this staple—ranking now only second to wheat, as a source of National Income—rests at this present day. The present petroleum production may be rated at nearly *seven and a-half million pounds*—3300 long tons—per day; or over 1,200,000 tons per year. Every person familiar with the oil-region knows that this could be *doubled*, in a few days, or weeks at most, at any time, if the market would bear it at remunerative prices, by simply pumping wells which have been "shut down," because it did not pay to pump them. It seems very reasonable, therefore, to assume that if we could use up for fuel half a million tons of oil per year, it could still be furnished at present prices, even with the present inadequate and (comparatively) expensive means of transportation. Moreover, even *since the beginning of the current year*, enormous new extensions of the available oil-territory have been proved; one of these discoveries extending and prolonging the northern oil-field some 40 or 50 miles further than before, and even into the State of New York.

The economy of transportation, and delivery to centers of population, will also speedily receive new and most vital developments. Within a year past, a "pipe-line," *forty* miles long, has been carried all the way to Pittsburgh, from the southern oil-field; and when the legal questions raised, out of conflicting interests with the railroads, are settled, new pipe-lines will soon deliver the oil directly into boats at Lake Erie ports; Titusville itself being but 40 miles from the lake shore.

I have said nothing of the numerous other known, but undeveloped, oil-fields we have; but not to make *too many* words at this head, I would cut short by saying that, having followed up the history of petroleum, from the earliest developments to the latest, I am forced to regard the idea of any probable increase of consumption, for fuel purposes, permanently or considerably raising the price of petroleum, faster than new sources of production and new means of transportation could be provided, for at least a generation to come, as a puerile bugbear altogether, and a consideration unworthy to influence the judgment of any well-informed practical man.

12. GENERAL CONCLUSIONS.

1. The Eames system of feeding furnaces with petroleum exhibits that minute study, on the part of the inventor, of the chemical nature and characteristics of the new fuel, which only could lead to immediate success in its practical application.

2. This thorough knowledge and appreciation of the special practical difficulties to be grappled with, together with a high degree of energy and intelligence that has manifestly been put forth in the pursuit, has led to an early and complete success in this novel art of operating furnaces with oil-fuel, such as has not often been paralleled in the History of Inventions.

3. The only method of introducing the oil into the furnace, which is at the same time sufficiently rapid and capable of bringing about a smokeless combustion—that is, in the form of a powerful jet of *complete* vapor—has been successfully attained; and the construction and method of the *Vapor-Generator* are such that no possible interruption, clogging or irregularity, short of a solution of its continuity, can occur in its action.

* It is *five* tons in the affidavits, with *five* tons of coal; but preferring to be *sure* in these figures, I have exaggerated the figures in favor of the coal.

† These men, it is proper to add, had at this time passed out of the employ of the inventor, by reason of the somewhat unexpected termination of the experiments. One of these men, the "Screw Man," THOMAS TEMPLE, is of 38 years experience, as he states in his affidavit; and is regarded as a very skilful and valuable artisan.

4. An exact adaptation and adjustment has been arrived at of the *Oil-Burner*, or device for securing rapid, complete, and uniformly-diffused combustion, with the enormous volume of air that is required, without possibility of such excess of heat in any part as to melt down and destroy the burner itself; this essential device being reduced to a marvel of simplicity and efficiency.

5. The additional plant and alterations required for the adaptation of the new system to existing furnaces are cheap, simple and facile.

6. The rapidity with which heats may be raised under the new system gives us two important advantages. Continuous firing is no longer indispensable to economical working, and stoppages for repairs will no longer involve such protracted and expensive delays.

7. The combination of devices constituting the Eames System has so developed the full powers and capabilities of oil-fuel, that we are enabled readily to measure and ascertain these with accuracy for the first time, and make them a subject of reliable deduction from actual figures obtained on a working scale.

8. We thus learn, as demonstrated in the preceding pages, that the economical advantages in Siderurgy, of added *intensity* of temperature, and energy or concentration of heat, in saving of *time*, as an element of *work* done, are even greater than have been contemplated by those men of science who have fully admitted the general principle; so much greater, that in siderurgical practice, where the heat taken up by the iron is but a very small fraction of the total heat, the calorific superiority of oil over coal, weight for weight—admitted, at most, heretofore as 17·5 to 10 or 14—actually and effectively rises to a ratio of *eight to one.*

9. It stands also as proved, by this investigation, that an additional, most important advantage results, in making steam, from the combined *purity* and *density* of this flame, and that a much larger steam-making absorption of heat, by the boiler-surface, ensues; the effect being similar to the comparative powers of an ordinary fuliginous gas-flame and that of the Bunsen burner; so that the chimney-gases are discharged at a temperature sometimes three hundred degrees Fahrenheit lower than from a coal fire; and the total efficiency of the furnace rises to ninety-two or ninety-three per cent. of the total heat engendered.

10. The tests of the elasticity and tensile strength of the iron re-heated by the oil-flame of EAMES, as well as the development of the laminæ by chemical corrosion, prove that this flame must be unsurpassable for effecting a strong and uniform weld, and for thus developing from a given iron the best strength and durability of which its chemical nature is susceptible.

All of which is respectfully submitted. HENRY WURTZ.

No. 12 HUDSON TERRACE, HOBOKEN, N. J.

The D. and H. Canal Co.'s Action on Store Bills.—It is announced that notice has been given by the Delaware and Hudson Canal Company that no more store bills will be collected from the men in the employ of that corporation. This is a step in the right direction, and we hope to see other coal companies in this section following the good example.—Wilkes-Barre *Record of the Times.*

CORRESPONDENCE.

ALBANY GAS LIGHT COMPANY,
SUPERINTENDENT'S OFFICE, GAS WORKS, ARCH ST.,
ALBANY, N. Y., Aug. 2, 1875.

TO THE EDITOR—SIR: In the Lowe Process for making heating and illuminating gas, described in the ENGINEERING AND MINING JOURNAL, vol. XX, page 97, if it contains much carbonic oxide, I fear it would be poisoncus if breathed. Am I correct in that? It seems to me a great objection to any gas, if an escape of it would poison a person exposed to it.

I have understood there is a law against the distribution of the "water gas" in some parts of Germany, on account of its containing a considerable portion of carbonic oxide. Am I right in that?

Common illuminating gas is bad enough to breathe; let us not send out anything more injurious.

Respectfully yours,
ISAAC BATTIN, Engineer and Superintendent.

Our correspondent is certainly correct in his supposition that the Lowe gas contains carbonic oxide, and that that gas is well-known to be poisonous in the highest degree. We do not, however, think that in itself an insuperable objection, as the small escapes that are unavoidable would not contain sufficient carbonic oxide to greatly increase the danger over that in using common lighting gas. We understand analyses of the Lowe gas are to be made, when we will be better able to answer this question.

We are not aware of any German law against the distribution of water gas.—ED. E. & M. J.

The Frue Concentrator.*

BY WALTER MCDERMOTT, of Silver Islet, Canada.

THIS machine is an improvement on the well-known endless travelling belt used for dressing slimes in many mills; the chief point of difference, and constituting the essential advantage of the present over the old form, is the application to the machine of a secondary agitating or shaking motion, in addition to the ordinary progressive motion of the belt.

In the machine, as heretofore made, the inclined belt or apron moved slowly up against a thin stream of water and ore, depositing the concentrations carried over in a tank placed below, through which the belt travelled, of course, in a reversed position. By reference to the accompanying drawings, it will be seen that in this main principle the new modification does not differ materially; but the means by which it is carried out are essentially different.

The machine consists of a substantial frame of wood, F, within which hang the shaking frame and rollers, B B, supporting the upper half of the travelling apron, A, which passes below around the driving drum, C, in the water-tank, J. On leaving the water-tank, the belt passes over the guiding and tightener pulley, G. The ends of the shaking-frame, B, are provided with iron yokes, H H, bored to admit the shafts of the end rollers, and carrying a lug, by which attachment is made to the connecting rods, K, from the crank-shaft, E. The shafts of the two end rollers slide in their bearings, L L, and the reciprocating motion is applied to them by the yokes, H, through the rollers, which are *fixed* on the shaft. The slow motion of the belt, communicated by driving-drum, C, turns the end rollers, and with them their shafts, which revolve in

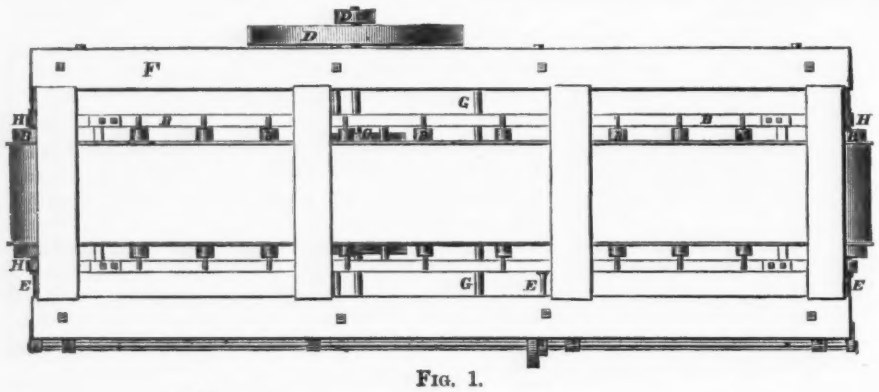


FIG. 1.

A, Endless Apron.
B, Apron Frame and Rollers.
C, Driving Drum.
D, Pulleys.
E, Shaft and Connecting Rods.
F, Wooden Frame.
G, Shaft of Regulating Pulley.
H, Yokes.

FIG. 2.

A, Endless Apron
B, Apron, Frame and Rollers.
C, Driving Drum.
D, Pulleys
E, Shaft.
F, Wooden Frame.
G, Regulating Pulley.
H, Sand Sluice.
I, Water Sluice.
J, Mineral Tank.
K, Waste Sand Launder.
L, Pillar Blocks.

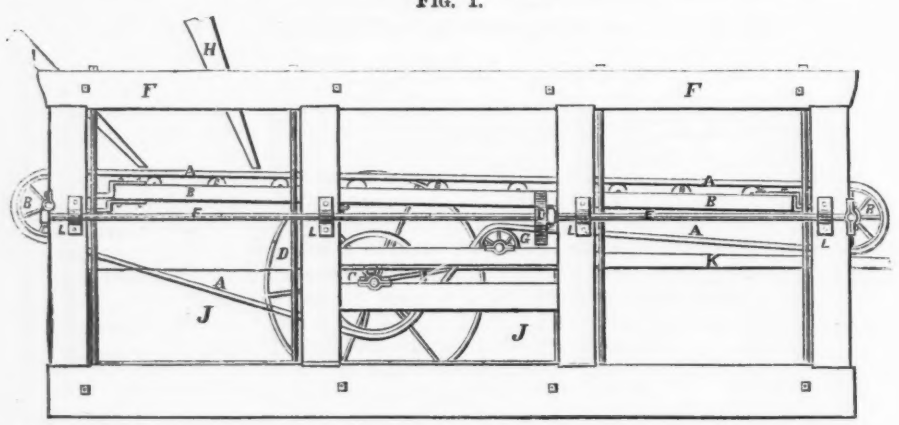


FIG. 2.

FIG. 3.

A, Endless Apron.
C, Driving Drum.
D, Pulleys.
F, Wooden Frame.
H, Yokes.
I, Collar Rings.
J, Rollers.
K, Connecting Rod.
L, Pillar Blocks.
M, Mineral Tank.
N, Sand Sluice.
O, Water Sluice.

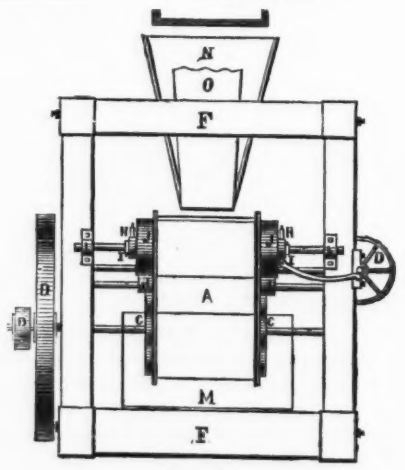


FIG. 3.

* A paper read before the American Institute of Mining Engineers, at the New Haven Meeting, February, 1875.

the yokes and their bearings, L L.* The side crank-shaft carries three cranks of ½-inch throw, or 1-inch stroke—one at each end, and one in or near the center. These cranks are attached to the shaking-frame by short connecting rods, the two end rods being pinned into the lugs on the yokes, while the central one is connected with an eye bolted on to the frame.

The belt is revolved slowly by the drum, advancing at the rate of 100 to 120 inches per minute, while, at the same time, a rapid lateral shaking is applied to it by the revolution of the side crank-shaft, which turns about 200 times per minute.

The sand to be dressed, suspended in a current of water, flows down a sluice and spreader, H, on to the belt. Close to the head of the machine, behind the ore sluice a thin stream of water strikes the belt and flows down it.

The operation of the machine is as follows:—The stream of ore and water from the sand sluice runs slowly down the belt, exposed to the lateral shaking of the same, which effects a settling action on the heavier portions of mineral. The slow advance of the belt carries the heavy mineral up against the descending current of water, past the stream from the water-sluice, and eventually depositing it in the water-tank below. The light rock, and all the water, traverse the length of the belt, and drop from the tail of the machine into the waste launder, K.

The inclination of belt and speed of same, the relative amounts of ore and water, and the amount and speed of the shaking motion, are all under control, being regulated according to the quality and size of the pulverized rock.

As first made, for experimental purposes, the belt was twelve feet along its upper or dressing surface—about 27 feet in all—and 20 inches in width. A number of machines have since been built in which the belt is 4 feet wide The capacity of the smaller size is 3 tons in 24 hours.

Of course, like every dressing machine made, or ever likely to be made, the results obtained are in proportion to the previous sizing of the ore; but the one point in which this concentrator excels others is in the working of fine "slimes." Experiments have been made on slimes flowing from the agitator of the ordinary Western amalgamating apparatus—slimes so fine that after persistent draining they still retain 33 per cent. of water—and, by the proper regulation of the machine, a regular and slow discharge of impalpable galena and zinc blende was delivered over the head of the belt. The valuable effects of the shaking motion are perceived at once by disconnecting the crank-shaft, when the capacity of the machine is at once reduced, the sand packs and the water cuts channels through it, and the "tailings" become perceptibly richer.

Experiments have been carried on for the last two years on a variety of ores of lead, copper and silver; and during that time many improvements have been made in the details of construction, so that the machine, as now manufactured, is simple, durable, self-acting, and requires very little power to run it.

The directors of the Silver Islet Company are so convinced of the value of this invention, that they have commenced building a large stamp mill and wash-house for the treatment of their poorer grades of silver ore, and in which the machine described will be the only concentrator employed. At the Silver Islet mine the rich ore is picked by hand, barrelled and shipped to the smelting works of the company, at Wyandotte, Mich. The concentrations from the poor ore will be sent to the same works.† Twenty washers, with belts of 4 feet in width, are now on the ground, with batteries, stamps, shafting and all machinery for a mill capable of treating from 100 to 150 tons a day; and it is expected that by the Spring of 1875 one-half of the mill will be running This form of concentrator will, in time, become a widely used and valuable adjunct to all amalgamating mills and concentrating works, in which such a slime-dresser has been a long-needed desideratum.

English Blast Furnace Practice.

From our Special Correspondent.

BARROW-IN-FURNESS, July 5, 1875.

THE Cleator Moor Company, which must certainly desire to maintain the high reputation of their iron for Bessemer and other purposes, would not have concluded, as they have done, to adopt the fire-brick stoves of WHITWELL's construction, unless they felt sure that they would prove superior in every respect to the cast iron ones which are now being removed. Those who are still inclined to doubt the possibility of maintaining a uniform temperature by means of this class of stoves, will perhaps be interested in the record of one of the furnaces at the West Cumberland Iron and Steel Co.'s Works. This furnace is 55 ft. high and 18 ft. in the boshes, and fitted with four Whitwell's stoves and one of LÜHRMANN's closed fronts, with water cinder block. For nearly a year it has been making spiegeleisen from Spanish ores, which are not nearly as workable as the spathose ores used by the Germans for the same purpose.

The result has been highly successful, there having been but little white iron made in connection with the spiegel, while, at the same time, the furnace has worked with the greatest regularity. The manager at these works, Mr. SNELUS, is now making alterations around all the furnaces, with a view to the entire adoption of these stoves at some future date.

At the Barrow Steel Works, the fire-brick stoves are not held in much favor; but the positive objection that is made to those which are in use there, is in reference to the blast-valves which, in later forms of the COWPER stoves, have been much improved.

The saving here in fuel by the use of these stoves has not been quite so apparent as in the North of England and Middlesbrough districts.

There is a very curious type of blowing engines in use at a number of the furnaces in this district which merits notice. It is what is called the "Grasshopper" engine, and although not resembling that active insect particularly, it rivals it in awkwardness of construction. Without drawings, it is a hard engine to describe, but some idea of it may be formed by knowing that it is a vertical engine, with the steam cylinder above the blowing cylinder, there being a distance of about 18 inches between the two. The upper end of the piston rod is connected in the ordinary manner to the end of a large horizontal beam, which latter, instead of being pivoted at its extreme end by a heavy vertical rod, whose lower end rests in a brass journal at the level of the engine room floor. The fly wheel connecting rod is in some of these engines fastened directly to the piston rod cross-head, while in other forms it is connected at some intermediate point on the beam. To compensate for the heavy weight of this beam on the down stroke of the piston, counterbalance weights have been put on the fly-wheel, but without remedying this great mechanical defect. In practice, this form of engine gives much trouble from breakages of the beam and excessive wear of some of the brasses.

The nature of the ore which is used in this neighborhood for making Bessemer iron has already been described. The most common mixture that is used is made up of three-quarters of the hard kidney ore, and the remainder a mixture of the soft variety with aluminous hematite, from near Belfast, in Ireland.

The importance of keeping the pig iron free from sulphur makes the use of a large proportion of limestone in the burden necessary. So much, in fact, is used that the slag very frequently air slacks and crumbles away a short time after leaving the furnace.

It has been found that when this slag is ground up with about 20 per cent. of coal ashes it makes a very good hydraulic cement. Taking advantage of this property in the slag, the Moss Bay Iron Co. have put up a plant for the purpose of making bricks out of it.

Both on account of its purity and density, the Durham coke is preferred as a fuel by the Bessemer iron makers. Its high price has induced some of them, however, to mix with it a small proportion of coke made from the native washed coal, and with quite satisfactory results. Anthracite coal from South Wales has also been tried in the same way, but it does not work well, choking up the hearth of the furnaces and proving uneconomical as a fuel.

The amount of Durham coke needed to make a ton of No. 1 iron varies from 19 cwt. to 25 cwt. at the different furnaces, the maximum amount only being necessary in the case of furnaces which have been kept in blast too long.

The weekly yield of iron per furnace varies from 250 to 500 tons, and in some special cases as much as 700 tons has been obtained by driving. Here, as in the other iron districts of England, one is forcibly struck by the much longer life of the furnace linings over what is obtained in the United States. The furnaces here remain in blast from five to eight years without showing, by irregular working and waste of fuel, that they need to be blown out. When one considers that furnaces in America which smelt the similarly rich hematites of Lake Superior by means of Connellsville coke, seldom last over two years without absolutely needing new lining, the question very naturally arises as to why this great difference. So important does this question seem, the writer proposes to enter into it more fully in a future communication.

The manufacture of Bessemer iron on such an extensive scale in this neighborhood has very naturally led to the putting up of plants for making the iron into steel.

At Workington, the West Cumberland I. and S. Co. have had four 5-ton converters at work for a number of years, and in connection with them a Ramsbottom reversing rail mill. The converters were put up after the first designs of Mr. BESSEMER, and consequently do not compare in efficiency with those of more recent construction. Last year a very important improvement was added to them, which has had the effect of largely increasing their weekly production. This consists in the substitution of Mr. HOLLEY's patent dry bottoms for the old fixed bottom of Mr. BESSEMER's design. The manager, Mr. SNELUS, speaks in the highest terms of this modification. Were it only supplemented by an efficient accessory plant, as constructed by Mr. HOLLEY, there would be no longer the complaint which is made at present that the rail mill can roll out twice as much steel as the converters will produce.

For cutting off the rail ends there is in this mill a very efficient saw and saw engine, which are quite different from what is generally used in the American mills for the same purpose The saw is on the crank shaft of one of BROTHERHOOD & HARDINGHAM's 3-cylinder engines, and of course is driven directly by them. They are both mounted upon a compact cast iron frame which moves on slides and is pushed up against the rail by means of a small hydraulic cylinder. After one end of the rail has been sawed off it is moved on by means of a small engine, and the other end is then taken off in the same manner. One advantage which is obtained by sawing off each end separately is that the sawyer can judge by the heat of the rail exactly how much to allow for contraction in cooling, which, by the system of having two fixed saws, cannot be done. Another very obvious advantage exists in the much smaller amount of machinery used for the purpose.

The ingots are bloomed or "cogged," as it is called here, before they are rolled in the rail mill. This fact shows that there has been quite a change in the views of the rail makers here, who, only a few years ago, contended that hammering was absolutely necessary to ensure good rails.

The Barrow Hematite Steel Works are built on such an immense scale, that I have not included them in the general description which has been given of the Bessemer iron making district. Commenced only fifteen years ago, they are, without doubt, the most extraordinary example of the rapid and successful growth of a manufacturing establishment that ever existed. In 1860, the first blast furnace was erected by the MESSRS. SCHNEIDER, which has grown to sixteen in number in 1875. Fourteen of these are in one grand row; the finest regiment of furnaces in the world. To furnish the immense amount of gas required, there are two large beam and sixteen "grasshopper" engines employed, one room containing ten of the latter. Battery after battery of boilers of the finest construction, and which are heated by the waste furnace gases, generate steam for these engines. What the hot-blast stoves alone have cost, would build a very good furnace and stock it. Upon the latter apparatus, much money has been expended in trying various forms, but at last, a slightly modified Sjero stove has been adopted as being the best in practice Five Cowper stoves are still in use to heat the blast for two of the furnaces. The height of ten of the furnaces is a uniform one of 62 feet, but with dimensions at the boshes varying from 17 to 20 feet. They all have the ordinary cup and cone closed top, and down-comers for taking off the gases. The charges are taken to the top on large platform trucks, holding six barrows, which are drawn up inclines that stretch over the pig beds in front of the furnaces. Running parallel with, and in front of, the furnaces, are lines of rail, by means of which the ore is delivered and the iron shipped with a minimun amount of handling. The business of managing this vast department, would seem to require a regiment of men, but, on the contrary, comparatively few are employed.

The weekly yield of these furnaces varies from 375 to 500 tons, depending on the kind of iron that is being made and also the dimensions of the furnaces. To make Bessemer iron for their own use, three, and sometimes four, furnaces are specially employed. The only ores used are hematites, which they obtain from their own mines in the neighborhood.

The steel making department contains eighteen 5-ton converters, nearly as many, in fact, as the total Bessemer plant in America, but, however, quite dif-

* The yokes are held close to the ends of the rollers by small collar rings and set screws, I I. The small rollers across the shaking frame support the belt, which, it will be seen, is slightly inclined. The belt itself is made of two-ply rubber cloth, the outer surface being rubber, and supplied with solid rubber flanges along its edges.

† In the late trials on Silver Islet ores, 90 per cent. of the silver was extracted in the form of concentrations assaying over 1,000 oz. to the ton, and at such a small cost that no hesitation was felt in adopting the process above all others, and after experiments made on the amalgamation of the ore by a gentleman of well-known practical experience and scientific attainments.

ferent in productive capacity. They think it a good days' work of 24 hours, to turn out 36 heats with eight converters. Old-fashioned converter bottoms and inadequate mechanical appliances are the reasons for this limited out-put. This company certainly are the pioneers in making application of Bessemer steel to all the uses to which iron has formerly been applied. Besides manufacturing steel rails, they have, for a long time, made boiler plate of such quality as rivals the best Lowmoor or charcoal iron in all the tests to which they are subjected, and it far exceeds them in homogeneousness and tensile strength.

Propellor shafts and large forgings for all kinds of engines are being constantly made, and the success which has attended their use has been wonderful indeed, when one considers the amount of abuse which has been heaped on this metal for its supposed uncertainty of texture. Railway tyres, angle iron (?) ship plates, fish bars, wire rod, merchant steel, all are made from the product of the Bessemer converter. The manager of these Works, Mr. SMITH, deserves great credit for having given practical trial to a large number of new inventions, which are noticeable on every hand. He evidently is wide awake to what his rivals in the business are doing, for, although, but a few months ago, when the Iron and Steel Institute held its meeting here, he strongly insisted on the necessity of remelting iron, before using it in the Bessemer converters, we now learn, that he has been trying the experiment of using the metal direct from the furnaces, with, it is to be hoped, a successful result. Let the American steel makers look out for their laurels, for the prospect is that England will, in a short time, be making most of her steel direct from the blast furnaces.

Sonman'' Coal.

THIS coal, from the Allegheny region, has been quoted of late among our Central Pennsylvania coals, and owing to its superior qualities and the enterprise of Messrs. DUSART & Co., the miners and proprietors, it has gained quite a reputation. The collieries are located at Sonman, Pennsylvania, 96 miles east of Pittsburgh, and 258 miles west of Philadelphia, on the Pennsylvania Railroad. The coal tract owned by this firm embraces 5,000 acres in a connected body, and contains 6 seams of coal, two of which are now being worked. This coal is successfully used by iron, steel, glass and other manufacturing industries Its steam generating qualities are such as to make it well worthy the consideration of all users of steam, either for manufacturing, railroad or steam use; and from the high amount of fixed carbon and the small amount of sulphur that the coal contains, it should make a very superior fuel for iron and steel making. The following are analyses of the coal, made by Dr. CHARLES M. CRESSON (A) and Messrs. BOOTH & GARRETT (B), of Philadelphia, the latter gentlemen furnishing the accompanying comparisons with other Pennsylvania coals:

	Sonman Coal. A.	Sonman Coal. B.	Broad Top Coal.	Westmoreland Gas Coal.
Volatile matter	18.30	17.70	17.85	32.75
Fixed carbon	78.60	78.60	74.65	61.45
Ash	*2.70	2 70	7.50	5.80
Sulphur	0.40	0.40	1 85	1.04
Coke	82.30	82.30	82 15	67.28
Penn. standard gas coal for steam.	1.000			
Sonman coal	0.959			

* The Ash consists of alumina, silica and lime, and does not produce a clinker.

Notes.

The Tennessee Coal and Railroad Company expect, in a few days, to fire up the forty-four coke ovens now not running. This will make 120 ovens fired, and the whole will make over 4,000 bushels of coke per day.—Tracy City *Miners' and Manufacturers' Journal.*

A Great Gun.—A Thompson twelve-inch, steel-lined, rifled, breech-loading cannon has just been completed by the South Boston (Mass.) Iron Works. It weighs 82,280 pounds or over a ton more than the famous Krupp gun exhibited at the Vienna exhibition. The destination of the gun is supposed to be Sandy Hook, where a United States Government Commission are now engaged in testing and experimenting with heavy ordnance.—*Boston Commercial Bulletin.*

John Siney's Trial on the charge of conspiracy and inciting to riot, in the Clearfield district, during the recent miners' strike, will take place in September. U. S. Senator WALLACE will conduct the prosecution. The defense has been assigned to Messrs. F. W. HUGHES, LIN BARTHOLOMEW, Judge BARRETT, of Clearfield, and Hon. BENJ. F. BUTLER, of Massachusetts, the latter of whom is a volunteer in the case. With such able counsel Mr. SINEY will doubtless make a strong defense.—Pittston *Gazette.*

Reduction of Wages at Fall River, Mass.—The Manufacturers' Board of Trade, of Fall River, Mass., held an important session a few days since, relative to the action of the mill corporations. The committee appointed some weeks since to visit the different manufacturing towns in New England, reported that the cotton business was in an unusually depressed condition, and that the wages paid operatives in Fall River were considerably in excess of other manufacturing centers. After some discussion it was voted, in view of the stagnancy of the market, to reduce the rate of wages to the same as paid before the late strike, the same to go into effect the first Monday in August. An agreement was signed that the reduction should be made in all the mills of the city, and in case of a partial strike a general lockout should follow.—*Boston Commercial Bulletin.*

Connellsville Coke.—Some years ago there seemed to be "coke fever" among a large number of capitalists. They invested largely and constructed miles of big ovens by the side of some of the western railroads of Pennsylvania, and notably along the Baltimore and Connellsville line. At first the profits of burning the coal into coke were very large, and, as "Col. SELLERS" so enthusiastically observes, there were "millions in it." But coke declined—not in quality, but in price, for the demand gradually grew less, as the cost of manufacturing iron was so high as to prevent remuneration.—Now, coke of the best kind is offered for one-third of its former price, and can be delivered in this city, from Connellsville, at a surprisingly low figure.—Efforts are being made to create a large market here for the article, and we hope they will be successful.—Baltimore *Journal of Commerce.*

Exports of Petroleum.—The export trade from the United States since 1st January, presents an aggregate of 109,995,224 gallons; which, compared with same period 1874, shows a decrease of 13,559,328 gallons. The shipments from the ports were as follows:

FROM	1875. gallons.	1874. gallons.
New York	70,654,263	78,789.572
Boston	1,301,477	1,904 366
Philadelphia	23,262,629	39,927,415
Baltimore	14,776,955	2,991,199
Total exports from United States.	109,995,224	123,554.552
Same time 1873		112,330,008
" " 1872		69,487,881

From the above figures it will be seen that New York shows a decrease in shipments of 8,135,309 gals.; Philadelphia, 16,664,786 gals.; Boston, 602,989 gals., whilst Baltimore has increased over 12,000,000 of gallons.—Baltimore *Journal of Commerce*, July 24, 1875.

Eureka, (Nev.,) Furnace Report for June, 1875.

DURING the month just passed, the various smelting works of this district rendered a very satisfactory working result in the reduction of the ores from Ruby Hill, Dunderberg and other localities.

THE EUREKA CONSOLIDATED.

Up to the 14th ult., three furnaces were in operation at the smelting works of this company. Since then, four have been in constant operation, producing a large amount of bullion. The run made at these furnaces on Tuesday last exceeds everything before accomplished. On that day 910 bars of bullion, over 50 tons, were produced, being an average of 12½ tons to the furnace, during the 24 hours. The working result for June is as follows:

Bullion produced—pounds	1,803,108
Bullion shipped—pounds	1,697,438
Ore received at the furnaces from the mines—pounds.	11,214,230
Charcoal received—bushels	176,855

Two hundred tons of the bullion produced were sold to the Richmond Company for refining purposes and are included in the amount shipped. The completion of the narrow-gauge road, connecting the mine of the company on Ruby Hill with the furnaces in town, will prove a great benefit in the transportation of ores. It is expected to have the road in running order within two weeks. A dividend of $2 per share was yesterday declared on the capital stock of the company, which had a tendency to make the stock firm. Latest quotation, $64.

THE RICHMOND.

This company, during the month of June, has had three furnaces constantly at work. The hydrocycle furnace has been employed a portion of the time, but is now undergoing repairs. The result of the introduction of this style of furnace has proved so satisfactory to the management that it has determined to increase its capacity, which is now being done. During the month, the working result was as follows:

Bullion produced—pounds	1,283,000
Ore received at furnaces—pounds	4,000,000
Charcoal received at furnaces—bushels.	150,000

From the refining department, 57 bars of silver were shipped, valued at $123,778, and 680,000 pounds of refined lead were also shipped to the railroad for the Eastern market. A large amount of machinery is now being received for the refining works, and during the present month another set of crystallizers will be put up, making three in all. In comparison with the amount of ore brought from the mines to the furnaces of other companies, that delivered at the Richmond Works seems small, which will be readily understood when explained. The ore dumps now contain about 8,000 tons of ore, which is about all that can be conveniently stored. During the month, the teams engaged in hauling from the mine have been idle about one-half the time, giving the furnaces an opportunity of working off the surplus supply now on the dumps. Beside the ore hauled from the company's mine on Ruby Hill, a large amount of outside ores are received for smelting, which also add to the amounts daily received at these works.

THE ATLAS COMPANY.

One furnace has been run by this company during the past month.

Bullion produced—pounds	414,803
Bullion shipped—pounds	421,425
Ore received at furnace—pounds	3,491,720
Charcoal received—bushels	43,000

K K CONSOLIDATED.

One furnace employed by this company, the working result for June proving very satisfactory:

Bullion produced—pounds.	160,000
Bullion shipped—pounds.	136,000
Ore received at furnace—pounds	3,000,000
Charcoal received - bushels	40,000

The bullion produced by this company assays in gold and silver $584 a ton.

SUMMARY.

Number of furnaces in operation in June, 1875—10.

Ore brought to the furnaces—pounds	21,705,950
Charcoal brought to furnaces - bushels	409,855
Bullion produced pounds	3,660,911
Bullion shipped- pounds	2,254,863
Refined lead shipped—pounds	680,000
No. silver bars shipped, 57—value	$123,778

NOTE.—Portions of the time the Eureka Consolidated and the Richmond Companies had four furnaces each in operation.—*Sentinel.*

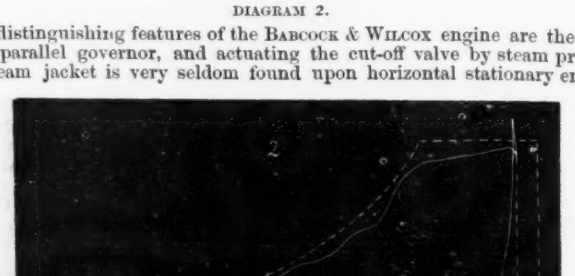
The Relative Economy of Automatic and Fixed Cut-off Engines.

Written for the ENGINEERING AND MINING JOURNAL by JOHN W. HILL, M. E.

CONCLUDED FROM PAGE 100.

DIAGRAM 2.

THE distinguishing features of the BABCOCK & WILCOX engine are the steam jacket, parallel governor, and actuating the cut-off valve by steam pressure. The steam jacket is very seldom found upon horizontal stationary engines;



indeed, the writer knows of no other engine that pretends to employ it to its fullest extent. The advantages of the steam jacket having been so fairly exemplified in the experience of the past century, it seems strange that

builders of first-class engines (land) should regard it with so much incredulity as apparently exists to-day. The steam jacket of this engine is really a connecting passage between the steam pipe and the chest. All steam entering the cylinder passes through the jacket space. This arrangement possesses several objectionable features.

The parallel governor possesses the peculiar property that changes in the position of the balls and the regulating mechanism are dependent solely upon the central forces, the arrangement of elements being such, that at any position of the balls the machine is in perfect equilibrium. In the WATT regulator, as applied to the CORLISS engine, chan es in speed cause the revolving balls to be lifted or gravitate through arcs of circles, hence the load of resistance upon the actuating mechanism increases with the angular velocity. In the BABCOCK & WILCOX regulator, the balls, in expanding or contracting, do not move through arcs of circles, but in approaching or receding from the central spindle, describe circles of different radii in the same horizontal plane; and as the rotating mechanism is in perfect equilibrium in any position, the changes in the radii of circles swept by the balls are dependent only upon an increase or diminution of the centrifugal force, and since the gravitating influence of the balls is counteracted by the balancing mechanism, the load of resistance upon the driving gear is approximately the same at all speeds.

The actuating of the cut-off valves by direct steam pressure is, perhaps, the most important feature in this engine.

In any engine, all steam that passes into the cylinder, in excess of that absolutely necessary to balance the resistance, is so much direct loss.

In a cut-off engine, all steam passing into the cylinder during the interval of port closure (providing no leaks exist in the outer joints), is a measure of this loss, for it occurs at a time when the reciprocating parts have passed beyond the point where accelleration is beneficial, and the mere increase in the mean effective pressure, resulting from a tardy closing of the port, represents no gain during one stroke of the piston, that may be stored up and expended during the succeeding stroke; hence, any force upon the piston in excess of that required to balance the resistance, will result in a diminished economy of performance, besides subjecting the elements of the engine to injurious strains beyond that due the load.

In the opinion of the writer, the conditions of admission and suppression of steam to the cylinder insuring the highest grade of economy are a *full* port with no intervening obstructions to impede the free flow of the steam and a rapid movement of the cut-off or steam valve over the port; these conditions are best fulfilled in the BABCOCK & WILCOX engine.

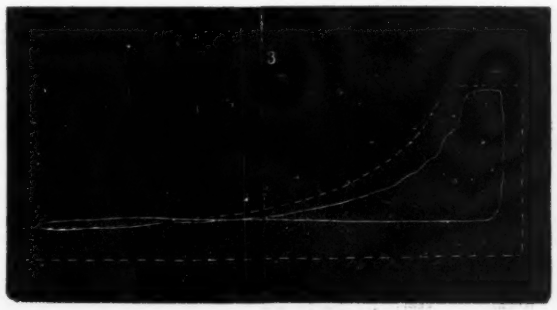
In the CORLISS engine, the port closure is effected by weights, hence the time required to close the port would be approximately the same at all pressures, whilst the quantity of steam passing into the cylinder during the time of suppression would increase with the pressure.

In the BABCOCK & WILCOX engine, the time occupied in closing the port becomes less as the pressure in the chest increases and the quantity of steam passing into the cylinder during suppression would be approximately the same for all steam pressures.

Although the diagrams 1 and 2 exhibit the highest grade of economy in the CORLISS engine, the writer inclines to the opinion that the principles involved in the construction of the BABCOCK & WILCOX engine warrant very much better results than shown in the accompanying table.

DIAGRAM 3.

The admission and cut-off of steam to the engine from which diagram 3 was obtained are effected by spindle valves having a variable lift. These valves have a movement parallel to the axis of cylinder and the *area* of port opening is determined by the pressure in the chest and the load on the engine. With a light load or high pressure the lift of the valve is the least. Conversely, for diminished pressure or augmented l ad the lift of valve and area of opening is



increased. The comparatively low piston speed (353) at which this engine is operated renders it somewhat superior to the located cut-off engine in economy, although at a piston speed equal to that of the CORLISS (480), the pernicious effect of the variable port opening would be promptly exhibited in the increased cost per I. H. P.

The celebrated HOCKING & LOAM engine, which thus far has produced the best *economy* on record,* used a similar valve (steam), and through the influence of the cataract passed the steam into the cylinder through a variable port opening; but the engine was operated at a very slow piston speed, but a trifle more than 1-5 that usually allowed the CORLISS engines.

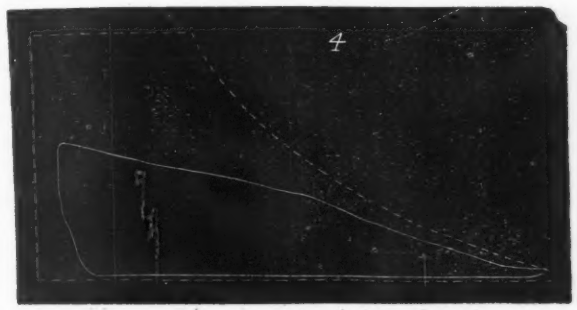
Whilst the spindle valve is, perhaps, the best for large engines at a slow piston speed, it has thus far proven of less efficiency for small engines at a high piston speed; and since it is quite generally conceded by engine builders that the hightest grade of economy in rotative engines is ultimately to be attained with higher pressures of steam than we now employ, and at a piston speed greatly in excess of that which now obtains, it seems scarcely likely that engines with this system of valve gear will ever take a prominent position in point of economy.

It should be borne in mind that at the time diagram 3 was taken, the engine was operating under a light load, and the economy is not so good as might be expected with the maximum load at best point of cut-off.

The mechanism for producing the variable cut-off on this engine is exceedingly simple and ingenious, and perhaps more reliable in its action with quick changes of load than the CORLISS gear.

DIAGRAM 4.

The slide valve engine, from which Diagram 4 was taken, represents the average mill engine of the Western country. Indeed, it is rather above the average, as the writer has had frequent occasion to estimate (with the aid of the indicator) the cost of the power in various kinds of manufacturing establishments, when the cost of the fuel, based upon an evaporative efficiency of boiler of 9 lb. of water per 1 of coal, ranged from 6 to 11 lb. of coal per indicated



horse power per hour, and this with the engines operating under the usual conditions.

This excessive consumption of fuel is chargeable more to the throttling of the steam by the governor, than to any inherent defects of the located cut-off.

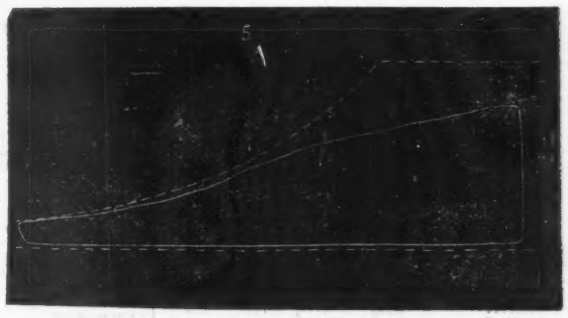
In engines with a variable expansion gear, controlled by the regulator, there is no impediment (save such as may occur at the port entrance) to the free flow of steam from the boiler to the cylinder. In the throttling engine, the peculiar construction of the governor valve and steam passages offers a resistance to the free flow of steam, much more vicious in its effect than any port and valve arrangement within the writer's knowledge. The tortuous passages through which the steam is forced to travel in the governor, succeed, in the majority of engines of this class, in reducing the pressure to from ¾ to ½ that existing in the boiler, whilst in the variable cut-off engines the only loss in pressure between the boiler and cylinder is that due to the length and number of bends in the conducting pipe. Further, in this class of engines the regulation is effected, not by diminishing the pressure, but by cutting off in the cylinder the volume of steam necessary for each particular stroke. In the throttling engine, the regulation is effected, not by diminishing the volume of steam admitted to the cylinder, but by a reduction of pressure. Now, since (according to REGNAULT) a given weight of fuel will evaporate the same quantity (weight) of water at all temperatures, or, in other words, as the sum of the sensible and latent heat of evaporation varies but slightly for different pressures, it is clear that the reduction in pressure, as shown in all diagrams from throttling engines, does not mean a corresponding reduction in the cost of the power, but properly signifies that a certain portion (in most instances a very large portion) of the *vis-viva* of the steam is vitiated through the influence of the governor. That this loss is in no wise due to the slide valve, it is only necessary to remove the governor, and make a free communication between the steam-drum of the boiler and the cylinder of the engine, as in locomotives, with an open throttle, and the volume of steam used regulated by the position of the link, and we have a diagram with a steam line and cut-off as perfect as 1 or 2.

Although the engine (Diagram 4) was developing an indicated horse power of 15.35, with an initial pressure of 19.75, the pressure in the boiler was maintained steadily at 40 lb. (above the atmosphere) in order to preserve the uniform motion of the engine. A reduction of 5 lb. in the boiler pressure produced a serious loss in the speed of the engine.

Had the engine been loaded to 50 I. H. P., the economy would have been increased somewhat.

DIAGRAM 5.

The engine from which Diagram 5 was obtained is the best of the double slide valve pattern ever brought to the writer's notice, the general design, proportions and finish being very much superior to the work usually turned out of engine-shops; and to the careful construction of the steam and exhaust



passages, form of valve faces and medium speed of piston, is due the very excellent economy (for this class of engine) shown in the table. Both engines, 4 and 5, were regulated by Judson governors; but in this engine the governor was larger than the size of steam pipe (3-inch), and the effect of throttling, as demonstrated in a former paragraph, is not so appreciable as in Diagram 4. At the same time, with a uniform pressure in the pipe, changes of load caused the speed of engine to range from 54 to 60 revolutions per minute.

In the Corliss and Babcock & Wilcox engines, from which Diagrams 1 and 2 were obtained, the percentage of variation for a run of eight hours was, in either case, but a trifle over the *fiftieth part* of a revolution per minute.

* POLE's treatise on the Cornish pumping engine, page 69.

A New Coal Association in Chicago.—There is trouble among the coal dealers of the city, the cause of the same being the action of the Coal Dealers' Exchange in advancing the pr ces to such an extent as to make it imp ssible for the small dealers to realize any profit. A meeting of the small dealers of the West Side was held on Tuesday evening, and an organization was effected to be known as the West Side Soft Coal Dealers' Association. Its objects are to endeavor to have the Coal Exchange reduce the present tariff, and to unite the small dealers for concerted action. A petition was drawn up, requesting the Coal Exchange to make a reduction. It is proposed, in case no favorable action is had on this petition, to appoint a member of the Associ tion to become a member of the Exchange, buy coal by the cargo, and deliver to each mem er of the Association his pro rata share.—*Chicago Inter-Ocean.*

Practical Notes on the Management of Gas Works.*

CONTINUED FROM PAGE 105.

PURIFICATION.

IMPURITIES IN COAL GAS.

"AFTER the gas has passed through the condensers, scrubbers, and exhauster, it has still to be deprived of the ammonia, sulphuretted hydrogen, and carbonic acid which it contains, the proportions of which, when Newcastle coal is used, may be taken at 1¼ parts of ammonia, 8 of sulphuretted hydrogen, and 25 of carbonic acid, in every 1000 parts of gas. From this it appears that the quantity of ammonia present is not nearly equal to the saturation of the sulphuretted hydrogen, and still less, therefore, to that of the carbonic acid. Hence, it is found that neutral metallic salts, such as the sulphate of iron, do not remove the whole of the sulphuretted hydrogen; nor neutral earthy salts, such as the muriate of lime, the whole of the carbonic acid. One great cause, therefore, of the difficulty of purification arises from the deficiency of ammonia, and not from its excess, for that necessitates the employment of some other alkali, or alkaline earth, of which lime is the cheapest.

LIME AS THE PURIFYING AGENT.

"Common lime, as used in a dry lime purifyer, is the most effectual, the most economical, and the least hurtful agent by which the impurities in coal gas can be removed; and next to it may be classed lime used in a wet purifier, though the latter is much less effective, and is apt to leave carbonic acid in the gas. Of course this goes no further than to the absorption of the acidulous compounds contained in the gas, such as carbonic acid and sulphuretted hydrogen. But something may be learned, nevertheless, from this peculiar fitness of lime, even in respect to the removal of the alkaline compounds. Neither carbonate of lime nor the hydro-sulphate of lime possess any affinity for those naphtha vapors or hydro-carbons on which the luminosity of gas depends. Hence the lime, when fully saturated with carbonic acid and sulphuretted hydrogen, absorbs none of the light-giving principles of coal gas, which pass on untouched. A very different result, however, takes place with the oxides, carbonates, and sulphurets of the metals.

"Though the ammonia cannot be removed by hydrated lime, the salts of that earth possess the property of absorbing it from the gas, and as lime causes the least absorption of illuminating matter, it follows that the salts of lime are, on that account, better adapted than any other substance for the removal of the alkaline or ammoniacal impurities from coal gas. It may indeed be taken as a generally admitted fact, that when any of the salts of lime, such as the nitrate, sulphate, or muriate, are so placed that the current of impure gas may first pass through or upon them, and afterwards traverse the filled compartments of a dry lime purifier, then the greatest known perfection of coal gas purification is obtained.

PURIFICATION BY OXIDE OF IRON.

"The impurities removed from the gas by oxide of iron are sulphuretted hydrogen and cyanogen, which form only two-sevenths, at the most, of the impurities contained in foul coal gas. To remove the carbonic acid, which constitutes the principal remaining portion, lime is required, and in almost as large a quantity as if no oxide of iron had been employed. On sulphuretted hydrogen, the hydrated and anhydrous forms of the sesquioxide of iron act precisely in the same manner, except that the anhydrous oxide is more active, and evolves more sensible heat than the hydrated. In both cases water is formed, sulphur is deposited, and proto-sulphuret of iron is produced; and in both cases the water which is formed remains uncombined with the metallic sulphuret, and may be driven off by the continued action of a current of hydrogen gas, heated to 212° Fahr. Whichever form of peroxide of iron is used, the resulting product is the same, and consists of free sulphur and anhydrous proto-sulphuret of iron, mixed or unmixed with water according to fortuitous circumstances. When, however, a mixture of this kind is exposed to the air, the iron absorbs oxygen and parts with its sulphur, a small portion of which also absorbs oxygen, and produces sulphuric acid, more especially if any ammonia or other alkaline matter be present in the materials; and as no water is combined with the sulphuret prior to this oxidizing process, the resulting oxide of iron must be anhydrous, whatever form of the oxide may have been originally employed. This accounts for an otherwise inexplicable fact—that when the hydrated sesqui-oxide is used the first time, it purifies only about half as much gas as on the second or third times of being used, when it has become, in a great measure, anhydrous. It has been found, indeed, by experiment, that in the first trial of a given quantity of hydrated oxide of iron, placed in a dry lime purifier, it purified only 1500 cubic feet of gas; on its second trial, after its exposure to the air, it purified 2400 feet; that, after a second exposure to the air, it purified 3050 feet; and, after another exposure, the gas purified by the same quantity of oxide of iron amounted to 4200 feet, or nearly three times the original volume. It may therefore be assumed, not only that the hydrated oxide becomes anhydrous by the process of revivification, but that the anhydrous form is the more active condition of the two, though the greater activity of the latter does not depend upon its hydrated or unhydrated condition, but is attributable to a peculiar molecular arrangement analogous to that of spongy platinum, nickel, cobalt, and some other substances, in which state a larger extent of surface is exposed to act upon the gas.

"One of the greatest disadvantages connected with the oxide of iron process of purification is the tendency of the sulphuret of iron to ignite and become red hot. When this happens, and is not checked at the commencement, the fire spreads through the entire mass, volumes of sulphurous acid are given off, the air becomes unfit for respiration to a considerable distance, and the oxide of iron is, in a great measure, spoilt. Nothing but great care can prevent the occurrence of such an accident, for it arises apparently from the same cause which leads to the ignition of metallic iron when in a state of minute division, such as results from the reduction of oxide of iron, at a low red heat, by hydrogen gas.

"The chemical and molecular actions that take place when sesqui-oxide of iron is exposed to impure coal gas, and afterwards to the action of atmospheric air, are not yet thoroughly understood. According to theory, not more than 16 lb. of oxide of iron should be required to remove the whole of the sulphuretted hydrogen produced from a ton of coal; but it usually takes about four times that quantity to produce the desired effect. The oxide may be used over and over again, until the quantity of sulphur in it becomes so great that, by fusing during the revivification, it seals up the particles of metallic oxide so as to prevent their further action on the foul gas, when, of course, a fresh supply is required.

"Mr. A. KING has ascertained that a much larger surface is requisite with oxide of iron purification than with lime, under equal velocities of current; and he has also demonstrated that the corrosive action of the salts generated by the revivification of the oxide renders the use of wrought iron sieves quite inadmissible.

"The use of lime subsequently to that of the oxide of iron, for the purpose of removing the carbonic acid, is quite indispensable, and ought never to be omitted. A comparison of limes is very easily made by dissolving them in diluted acid—that which leaves the least insoluble base or sediment is the best."

PREPARATION OF LIME FOR USE.

In preparing the lime for the purifiers, it should be beaten, sifted fine, and water added, until, by compression in the hand, it will retain the form thus given to it. If any lumps remain, their outsides only are acted upon, and there is consequently a waste of material; if the lime is too wet, it will cake on the shelves, and the gas will pass through in masses, or without the requisite subdivision, and consequently in a partially purified state. If the lime used is of a close caking character, it should be mixed with some fine sifted smithy ashes or sawdust, so as to make it more open and porous.

CHARGING THE PURIFIERS.

After the lime has been thus prepared, the shelves of the purifiers should be covered with it to the depth of 2½ inches, taking care that the thickness of the layer is as uniform as possible, and that no interstices or other places are left uncovered; otherwise the gas will not be properly subdivided or distributed over the surface, but will, in a great measure, make its way through the unprotected or thinner parts, thereby causing both waste of material and imperfect purification. When the whole of the sieves or grids have been thus prepared, the lid of the purifier must be put on and fastened down, the lute replenished with water, if necessary, the air-plug put in, and the gas may then be turned into the purifier.

In some cases moss is first laid on the sieves, and the lime spread on the top of this; the use of the moss being to subdivide the gas more effectually into the thinnest possible streams, and to bring it and the lime more completely into contact.

(TO BE CONTINUED.)

* From notes compiled by W. C. HOLMES & Co., Engineers and Contractors of Gas Works, Huddersfield, England. We shall be pleased to hear from our managers of gas works as to the way they do these things, and wherein our ways are improvements on the English.

STATISTICS OF COAL PRODUCTION

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending July 31:

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co.	69,363	1,840,629	30,564	1,389,414
D. L. and W. RR. Co.	78,367	1,988,580	37,820	1,444,608
Penn. Coal Co	31,020	757,667	29,927	729,373
L. V. RR. Co.	24,395	504,848	14,438	579,782
P. and N. Y. RR. Co.	2,636	66,303	626	36,289
C. RR. of N. J	56,727	484,229	1,061	740,755
Penn. Canal	15,329	65,095	10,065	170,571
Lack. and B. RR.	..	81,493	..	112 529
	277,837	5,788,850	124,502	5,203,321
Lehigh Region.				
L. V. RR. Co	87,956	482,769	60,009	1,813,560
C. RR. of N. J.	47,970	146,902	21,942	594,352
D. H. and W. B. RR.	4,109	41,964	2,957	19.497
	140,035	671,635	84,908	2,427,409
Schuylkill Region.				
P. and R. R. RR. Co.	186,046	1,540,450	143,773	2,699,950
Shamokin and Lykens Val.	34,760	673,610	27,666	492,852
	220,806	2,214,060	171,439	3,192,802
Sullivan Region.				
Sul. and Erie RR. Co.	..	5,557	1,183	20,918
Total	638,678	8,680,102	382,032	10,844,450
Increase	256,264	..	..	..
Decrease	..	2,164,348	..	..

* Year beginning January 1st.

‡ The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending July 31, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb.	49,321	1,280,445
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb.	6,749	173,920
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	6,656	127,110
*East Broad Top	705	26,426
Clearfield Region, Pa.		
*Snow Shoe	1,095	40,203
*Tyrone and Clearfield	17,500	477,140
Allegheny Region, Pa.		
*Pennsylvania RR.	3,681	137,164
Pittsburgh Region, Pa.		
*West Penn. RR	3,768	122,769
*Southwest Penn. RR	196	5,032
*Penn. & Westmoreland gas coal, Pa. RR.	21,730	331,328
*Pennsylvania RR.	9,849	227,524
Kanawha Region, W. Va.		
†Chesapeake and Ohio RR.	2,488	92,606

* To July 28. † To July 24.

Bituminous Coal Production to July 1st, 1875.

The following does not include the total production, but such quantities as have been reported to this office:

Pennsylvania	4,551,748
Ohio	313,579
Maryland	1,198,010
Illinois	454,217
Indiana	26,041
Iowa	50,381
Wyoming	61,369
West Virginia	80,325
Tennessee	43,087
Alabama	28,269
Colorado	12,096
	6,819,116

The Production of Coke for the week ending July 28.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	273
Alleghany Region	..	53
West Penn. RR.	499	29,051
Southwest Penn. RR.	10,542	299,168
Penn. & Westmoreland Region, Penn. RR.	1,232	17,519
Pittsburgh, Penn. RR.	2,184	58,548
Total	14,457	404,612

The receipts at Port Richmond for the week were 70,000 tons, shipments 70,000 tons, and balance on hand 50,000 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 55,112 tons.

The Exports of Coal from Baltimore for the week were 382 tons, and for the year, 20,411 tons as compared with 56,138 tons to the corresponding time in 1874.

The receipts at Buffalo, via L. S. and M. S. RR. for the week were 3,058 tons. The exports by Lake were 12,640 tons, and imports 1,495 tons.

Belvidere Delaware RR. report:

	Week.	Year 1875.	Year 1874.
The receipts of coal at Coal Port (Tr'ton)	10,021	29,661	160,404
" " " South Amboy	9,632	50,782	392,383
Shipments of Coal Port (Trenton)	11,669	27,179	161,267
" South Amboy	7,565	116,383	365,783

Receipts of coal at Boston, for week ending July 30, and year from September 1st, 1874.

From	Week. Tons.	Previously Tons.	1874. Tons.
Alexandria	2,560	72,096	72,235
Georgetown	1,605	19,324	18,846
Philadelphia	20,634	403.389	530,228
Baltimore	3,588	150,580	219,036
Other places	6,851	223,723	191,549
Great Britain	....	2,224	3,204
Nova Scotia	1,871	23,425	60,608

Shipments from Pictou, N. S, for the week ending July 10:

	Tons. Week.	Year.
To United States	1115	7485
" West Indies	1107	1107
" South America	—	1002
" Canada	9569	38637
" Other Provinces	2630	16290
	14,421	64521

Shipments from the Block House, Cow Bay, C. B., to the following destinations, for the week ending July 30:

	Week.	Year.
Provinces	264	3379
West Indies	..	806
United Stated	1966	3020
	2230	7205

COAL TRADE REVIEW.

Duties.

Anthracite free, *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, Friday Evening, Aug. 6, 1875.

Anthracite.

The demand for anthracite coal, outside of the hard coals, is very quiet. Of the large companies, all have an accumulation of stocks, excepting the Lehigh and Wilkes-Barre Coal Company; the Philadelphia and Reading Company, however, made no increase to theirs, last week, their stock at Port Richmond being 50,000 tons last Saturday, as compared with the same quantity at the end of the previous week. The Lehigh and Wilkes-Barre Coal Company shipped 219,000 tons of coal from Port Johnston during July, being the largest month's shipments ever made by that company. They only began on the 7th of the month. The companies are maintaining prices, but many middle-men are making concessions varying from 5c. to 25c. per ton, according as demurrages etc., press them.

The output of anthracite coal last week was 638,678 tons, or at the rate of over 30,000,000 per annum. It shows an increase over the previous week of 51,354 tons, and over the corresponding week of last year of 256,264 tons. The total output since January 1st is 8,680,102 tons, or a decrease of 2,164,348 tons as compared with the corresponding period of 1874.

Mr. Gowen's Argument.—F. B. GOWEN, Esq., President of the Philadelphia and Reading Railroad Co., delivered a remarkably able argument on the management of the coal trade before the Legislative Committee examining into the charges of violation, by the P. & R. R. R. Co., of its charter. Like all of Mr. GOWEN'S arguments, it is a masterpiece in every respect. He thoroughly understands the mining and selling of coal, the labor question, and the political phase of coal mining. His denunciation of the dealers who sell from 1700 to 1900 lb. for a ton of coal, and of the political rings that live by a series of quasi-legal impositions on the mining companies, are well-deserved exposures of notorious abuses. On the labor question, Mr. GOWEN takes the views long advocated by the ENGINEERING AND MINING JOURNAL, and shows that the over-supply of labor in the anthracite region is due to the fact that the rate of wages paid there is greater than the same class of labor can earn in any other part of the world. We shall next week devote some of our space to a full review of this masterly argument, and, if possible, will publish it in full.

Bituminous.

There is no improvement noticeable in the demand for bituminous coals, and we hear of many sales made at absolute losses. We might quote sales at very low figures, but as many are only exceptional, and the result of accumulation of stocks and of cargoes being under demurrage, they cannot be called market prices; a large quantity could not be purchased at the same figures, which have, however, a demoralising effect. We hear of occasional sales of importance, and some companies are receiving a fair amount of smaller orders.

The output of Cumberland coal during last week was within a few hundred tons of the previous week's tonnage, but shows a falling off of over 13,000 tons as compared with the corresponding week of last year. The total output since January 1st shows a falling off of 55,112 tons as compared with the corresponding period of last year. The falling off this year of coal shipments from the line of the Pennsylvania Railroad and branches is less than 50,000. The Westmoreland gas coal region alone shows a falling off of 201,827 tons, while the Clearfield and Snow Shoe regions show a gain of about 135,000 tons; the Broad Top one of 18,000 tons; and all the other regions showing small gains, excepting the Pittsburgh, which shows a loss of about 20,000 tons. The total coke shipments of the road, however, show a gain of about 90,000 tons. The great falling-off in the shipments of gas coal is partly accounted for by a smaller demand this year, but mostly by the long strike that occurred there. There is but little coal being shipped over the Chesapeake and Ohio Canal. The Maryland, Borden, Consolidation and American Companies are doing all the business worthy of note. The Borden Company were unable to ship from Cumberland for several days, owing to a rise in the Potomac river, which prevented them getting boats under their chutes.

The Cumberland *Times* of the 6th inst. says: "*Eighteen* boats of one company (the Maryland) cleared this port yesterday with shipments of coal amounting to 2,003 tons 16 cwt. The heaviest previous shipment, this season, on one day, was by the Consolidation Company—seventeen boats.

Foreign and Gas Coal.—There have been no further arrivals of foreign coal, in which there is nothing doing, as is customary at this season of the year. We learn of nothing new in Westmoreland or Youghiogheny coals. We are reported a sale of 5,000 tons of West Virginia gas coal, at Richmond, for shipment to the Boston Gas-Light Company.

Freights.—Rates of coal on L. V. R. R. have advanced 2c. per ton on through coal, and on the P. and and N. Y. R. R. 1c. The Delaware and Raritan Canal has advanced rates 5c. per ton. Vessels are much more abundant at Georgetown, owing to the small inquiry for them, and freights are inclined to weakness. Charters have been made as follows: To Boston, $1 65@$1 70; to the Sound, $1 40; and to this city, $1 30. Freights from here to Boston remain at $1 25 per ton, with a small supply and demand.

MESSRS. PERKINS & JOB, in their circular dated July 31, quote charters from Cow Bay to this city of 1,890 tons at $2, and 1,500 tons from Pictou at $1 87. They quote from $2 25@$2 50 gold, from Pictou and Cape Breton to Montreal.

Philadelphia Coal Trade.

PHILADELPHIA, Aug. 5, 1875.

The trade here is evidently undergoing a change. It will be hard to keep on at the present rate through August. The dealers have been filling themselves, and receiving coal faster than they delivered it, and the demand is not as good. Whether it will improve sufficiently to fill the gap before we reach some time in September, the activity generally due to the large number of small orders, is still an open question. There is a large proportion of domestic sizes, much larger than usual, on account of the poor demand for the large sizes; and it is not likely that any extra activity for domestic sizes could last with the ability of the coal regions to meet it.

Vessels are accumulating, and although there is no decline in freights, which still remain at $1.60 to Boston and $1.35 to Rhode Island, it is evident that before long captains will take less rather than wait patiently.

Our papers have been filled with the argument of F. B. GOWEN, President of the Reading R. R, before the Legislative Committee, which took place at Atlantic City last week. It was a great and able effort, and succeeded admirably in showing how a lawyer can talk for two days to argue a case, and speak of everything except the case itself. The case was closed by Mr. SILAS W. PETTIT, of this city. He confined himself to the subject under consideration. It was a masterly production, and when published will attract great attention.

Wholesale Prices of Anthracite Coal for August f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 00	5 10	5 20	5 45	5 90	4 90
‡Pittston at Newburgh	5 05	5 05	5 15	5 30	5 80	4 85
Wilkesbarre at Port Johnston	5 00	5 10	5 20	5 45	5 90	4 90
Plymouth, R. A., *Net*	....	....	....	5 45	5 90	4 90
Susque. Coal Co. at Amboy W.A.	....	....	....	....	....	....
Kingston at Hoboken	....	....	....	....	....	....
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 45	5 55	5 90	5 10
Old Company's Room Run "	....	....		....	....	....
§Sugar Loaf, Hobok. & Amb."	5 55	....	5 45	5 55	5 90	5 10
Lehigh Coal Exchange "	5 55	....	5 45	5 55	5 90	5 10
Honey Brook Lehigh	5 55	....	5 45	5 55	5 90	5 10
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	5 55	....	5 45	5 55	5 90	5 10
†**Schuylkill Coals at Port Richmond.**						
Schuylkill white ash	4 50	4 60	4 70	4 95	5 40	4 40
Schuylkill red ash	....	....	5 00	5 05	5 45	4 40
Shamokin white and red ash	....	....	....	5 15	5 55	4 45
Lorberry	....	....	5 70	5 70	5 70	4 60
Lykens Valley	....	....	6 30	6 30	6 30	5 45

	Per ton.
Freight from Hoboken and Weehawken to New York	40c.
" " Elizabethport & Port Johnston to N. York.	45c.
" " South Amboy to New York	50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton. The expense of towing vessels from New York harbor to Rondout and back will be borne by this Company.

† Freight from Port Richmond to New York (free of discharging) 85c. per ton.

‡ Prices to the Trade.

§ By Canal at New York, Jersey City and Brooklyn, 30c. additional alongside.

Schuylkill coal is delivered f.o.b. of boats in New York harbor at 50c. per ton additional to these rates.

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	....
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt.	5 00	6 50
Despard, West Va.,	——	6 50
Murphy Run, West Va., at Baltimore	4 75	6 30
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	30/	12 00
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	....@....
Cumberland, at Baltimore	4 15@4 50	5 75@6 25
Clearfield and Allegheny, "Derby," "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, $1 25; at Greenwich, Phil.	4 60	5 65

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
*Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	7 00	7 25	6 75
Lehigh & Locust Mountain, del'd	....	....	....
Schuylkill Red Ash, del'd	....	....	....

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

* Lackawanna grate is quoted 25c. per ton less than egg.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " "	25 00
American Sterling " " "	13 50
American Orrel " " "	15 00@16 00
Red Bank Cannel " " "	14 00
Cumberland " " "	7 00

Prices of Scranton, Pittston, Plymouth, Shamokin and Lackawanna Coal, for the Month of August, at various points.

PER TON of 2000 lb.

	DELIVERED AT						
	Elmira.	Watkins.	Ithaca.	* Syracuse.	† Oswego.	† Rochester.	‡ Buffalo.
	Afloat	Afloat	Afloat	Afloat	F.O.B	Afloat	Afloat
Grate	4 45	4 75	4 75	4 90	5 85	5 60	5 85
Egg	4 45	4 75	4 75	4 90	5 85	5 60	5 85
Stove	4 85	5 20	5 20	5 35	6 30	6 05	6 30
Nut	4 60	4 65	4 95	5 10	6 05	5 80	6 05

† Coal is delivered to retail consumers at these points for $1 25 per ton additional to these rates.

* At this point 70c. per ton additional is charged to retail consumers.

‡ At this point 50c. per ton additional is charged to retail consumers.

Baltimore, Md. Aug. 2, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 65
Broken	5 46	5 31
Egg	5 77	5 62
Stove	6 02	5 87
Nut	4 90	4 87
Shamokin, (red or white ash), and "Boston," freeburning white ash,		
Egg	5 80	5 62
Stove	6 00	5 87
Lykens Valley, red ash,		
All sizes	6 30	9 12

From wharf or yard, wholesale, 50@75c. additional.

By retail, all kinds and sizes, per 2240 lb. $7 00@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 35	4 65
West Virginia f. o. b. at Locust Point		5 50
Youghiogheny Gas, f. o. b. at Locust Point		5 50
Swanton Coal, George's Creek		4 40

Boston. Aug. 2, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	10 00	Anthracite .6 50@	7 25
Glace Bay	5 00	" retail .7 50@	8 00
Sydney	6 25		

The *Shipping List* says:—"There is no change to notice since last week. The sales of Cannel continue to be confined to small lots. Nova Scotia coal continues very dull with light receipts and prices are nominal. Gas coals have been arriving quite freely but were previously contracted for. In Cumberland, nothing of any consequence has been done. Anthracite is arriving quite freely and meets with a moderate demand. The retail sales have been at $7 50@8 25; and cargo prices are nominally $6 50@7 per ton."

The *Commercial Bulletin* says:—"Anthracite—Receipts have been ample for the trade, and shipments continue brisk from all the coal ports. The advance in prices is ten cents per ton on egg, stove and chestnut only. The retailers are still working to perfect a combination, with better chances of success than heretofore. No large sales reported. There is an unusual demand for pea and dust, which has been introduced extensively among some of the large manufacturers, who are using it under a new process. Cumberland is quiet. Some of the large mills are changing from anthracite, and using this coal with good success. Gas Coals—Shipments continue freely on early contracts."

Buffalo, N. Y. Aug. 2, 1875.

Reported by our Special Correspondent.

Prices free on board vessels here are as follows:

ANTHRACITE.

	Afloat.	F. O. B. Vessel.	Retail. Deliv'd.
Grate	$5 85	$6 35	$7 00
Egg	5 85	6 35	7 00
Stove	6 30	6 80	7 45
Nut	6 05	6 55	7 20

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co.	3 50	3 25	....	2 30	....

Chicago, Ill. Aug. 2, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

Retail prices per ton of 2000 lb. delivered to buyer.

No change in prices.

		BITUMINOUS.	
Lehigh Lump	$10 00	Briar Hill and Erie	@ 7 00
Lehigh grate and egg	10 00	Walnut Hill, Pa	@ 6 00
Lehigh stove and chest.	10 50	Midway, Pa	@ 6 00
Lackawanna, Wilkes-Barre and Pittston*		Cannel	@ 9 00
Grate and egg	9 00	Blossburg	8 00
Stove and chestnut	9 50	Indiana Block	5 50
		Hocking "Brooks"	6 00
		Wilmington and Illinois	4 50

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Receipts of coal at Chicago:

To July 31st, 1875, Anthracite	178,140	Tons.
Same time 1874 "	192,000	"
Carried over from the year before	100,000	"
Bituminous, by Lake, 1875	57,870	"

Cincinnati, O. Aug. 2, 1875.

Reported by our Special Correspondent.

Owing to the exceeding high water our stock of coal at Cincinnati has been largely replenished and prices are correspondingly low. We quote as follows:

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	7½c.	—
Pomeroy coal	6c.	—
Cannel coal, according to quality	12½@16c.	—
Semi Cannel	7½c.	—
The following are the retail prices delivered:		
Youghiogheny	— c.	$3 25
Pomeroy	— c.	2 75
Cannel	— c.	5 50
Kanawha Semi Cannel	— c.	3 25
Anthracite	9 50@10	
Foundry coke	—	—
Coke, hard and soft	10 c.	—

Cleveland, O. Aug. 2, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb. f. o. b. vessels.

Youghiogheny, lump	$4 40	Columbiana	$3 00
Youghiogheny, nut	3 50	StripVein & Steubenville	3 30
Briar Hill, according to quality	$3 05 to 4 00	Mountain Blossburgh (blacksmith)	5 40
Massillon	$3 00 4 00	American Cannel Coal Co.'s Cannel	4 40
Hocking Valley	3 35		
Straitsville	3 35		

The first monthly meeting of the Cleveland Coal Exchange was held at the Board of Trade rooms on Saturday afternoon.

The opening business was the receipt of a communication from the Tuscarawas Valley Coal Producers' Association in which they offered to pledge themselves that they "will sell no coal to retail dealers in this market unless settlement is made monthly, and after ten days have expired past the first of any month supplies will be cut off unless a full settlement is made. Settlements to be made by weighlock weights on canal coal, and by railroad weights on railroad coal Freights to be paid by the consignees." That the Producers' Association will co-operate with the Coal Exchange of Cleveland in all reasonable rules and regulations which they may adopt for the general benefit of the trade, and the maintenance of just and honorable dealing with the public. And particularly that they pledge themselves to enforce article eleven of the constitution of said Exchange.

The Board of Directors also reported the following prices during the month of August for coal delivered for domestic purposes:

Anthracite—Egg	$7 75
Grate	7 25
Single tons—Stove	8 25
Chestnut	8 00

Car loads twenty-five cents per ton less, for five to ten car loads, ten cents reduction, and over ten car loads, fifteen cents reduction, from car load prices.

Massillon or Mineral Ridge Lump	$4 50
" " " " Nut	4 00
" " " " Dom. Slack	3 00

One to five car loads, twenty-five cents less, and five car loads or more, fifty cents less than single tons.—*Manufacturing and Trade Review.*

Detroit, Mich. Aug. 2, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep.sizes	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	7 50
		Massillon	7 00

Erie, Pa. Aug. 2, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb. Bituminous f. o. b.

Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. Aug. 2, 1875.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers. Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

Indian Creek, per ton	$2 75	Peytona cannel, per ton	7 00
White River, "	2 75	Indiana Cannel	6 50
Brazil Block, "	2 65	Hocking Valley	4 25
Highland, grate, "	2 25	Youghiogheny	4 75
Block coal, nut, per car	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack "	17 00	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Broken	$9 95	Nut	9 80
Egg	9 95	Stove	10 25

Owing to the Miner's strike there is no Lehigh coal in this market.

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	8
White River	14	" Slack, "	7
Brazil Block	14	Peytona Cannel	28
Highland grate	14	Indiana "	24
Block Nut, domestic use	12	Youghiogheny	20
Highland Nut, " "	12	Blossburg	26
" " steam	8	Piedmont	26

GAS COKE (measured.)

Crushed	15c	Lump	12c.

ANTHRACITE.

Wilkes-Barre and Lackawanna (all sizes)	$10 per ton.
Lehigh, retail	$11 50 per ton,

Louisville, Ky. Aug. 2, 1875.

Specially reported by Messrs. BYRNE & SPEED.

Since the last run of Pittsburgh coal it has been selling at 8c. per bushel in the river, and in some instances even lower than this. The demand is springing up very decidedly, giving prospect of large sales for the month. The following are our retail prices:

WHOLESALE.

	per bushel		per bushel
Pittsburgh	8c	Pine Hill	9c.
Raymond City	9c.	Kentucky	9c.

RETAIL.

	per bushel		per bushel
Pittsburgh	14c.	Peytona Cannel	22c.
Raymond City	12c.	Buckeye "	20c.
Pine Hill	12c.	City-made Coke	10c
Kentucky	11c.	Anth., per ton, $10 00 to 10 50	

Screened Pittsburgh per load	$3 00
Screened Raymond City	2 75
Fine Hill (Kentucky)	2 75
Cannel	$5 to 5 50

Milwaukee, Wis. Aug. 2, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Scranton	$9 50
Lehigh Prepared	10 50	Briar Hill, select	8 00
Lackawanna	9 50	Blossburgh	8 00
Pittston	9 50	Pittsburgh	7 00

New Orleans, La. July 31, 1875.

Pittsburgh coal, retail, per bbl	60c.
" wholesale	35c.
" steamboats, per box	50c.
" to manufacturers, per bbl	55c.
" shipments, per hhd	$6 00
Anthracite, wholesale, per ton	none.
" retail, "	...
Virginia Cannel, per bbl	90c.
Scotch " "	...
St. Bernard, wholesale, per bbl	37½c.
" retail, "	60c.

In consequence of the great rise at head waters our market has been panicky and on a decline. The stock of coal afloat here this day is 158 boats and 3 barges. Consumption in July, 10 boats.

Pittsburgh, Pa. Aug. 4, 1875.

By our Special Correspondent.

Per ton of 2000 lb. and Bushel of 76 lb.

Youghiogheny coal, ton,	$2 00	Pittsburgh retail deliv'd.	
" coke, "	2 50	per bushel	0@1cc.
Connellsville coal, "	2 50	Anth'cite on cars Lehigh	$7 75
" coke	$2 25@2 75	" " Wilkes-	
Pittsburgh coal	1 85	Barre	6 75

Twenty-five to fifty cents per ton additional for delivery.

COAL—The river is again, or will be, as soon as it recedes somewhat, in good condition for running coal, and it is probable that all the coal loaded and ready to move will be transferred from here to the down river markets within the next few days. Prior to the recent rise, it was estimated that there were 12,000,000 to 15,000,000 bushels loaded; of this, about 11 000,000 bushels were sent out on the last rise, so that, as will be seen, there is still considerable here to go, and as already intimated, there will be very little left after this second run; and in view of this, together with the fact that a great many empty packages have arrived, it is safe to infer that the miners will have steady work for some time to come. Our advices from Cincinnati and Louisville report a considerable decline in prices at those points, but this was not unexpected, the natural effect of such a large increase of stock.

COKE—There is nothing particularly new or important to notice in the coke trade that we are aware of; business, while it is not as active as it was during the coal strikes, when coke was substituted in place of coal by the pig iron furnaces, is holding out as well as could be expected under existing circumstances. There was a large quantity shipped out on the last rise of water, and there will be additional shipments by river within the next few days, as it is again, or will be as soon as it recedes, in fine navigable condition, and it follows therefore that the stock hereabouts within the next week or so will be almost exhausted. There is a fair demand from points not accessible by rail and prices are fully maintained, $2 65@2 75 per ton, delivered free on cars in Pittsburgh.—*American Manufacturer.*

Richmond, Va. Aug. 2, 1875.

Specially reported by S. H. HAWES, Dealer in Coal.

A contract has just been made with the Boston Gas Light Company for 5000 tons of gas coal. Prices are unchanged, as follows:

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$12 00	New River Bituminous,	$4 85
" semi-Cannel	4 75	Clover Hill Coal	4 25
Coalburgh Splint	4 90	James River Bitum	3 30
Lewiston "	4 90	" " Carbonite,	5 80
Kanawha Gas coal	4 50		

San Francisco.

From the *Commercial Herald* of July 22, 1875.

Imports from January 1st to July 13:

Anthracite tons	6,348	English, tons	23,673
Australian, tons	59,630	Vancouver Island, tons	31,147
Coos Bay, tons	20,000	Rocky Mountain, tons	42
Cumberland, tons	6,539	Seattle, tons	25,966
Mt. Diablo, tons (6 mos)	75,700	Bellingham Bay, tons	6,170

The Pacific Mail Steamship Company, in making contracts for carrying the Government mails to and from British Columbia, secured a coal contract, also, with the Wellington mines, they agreeing to take 4,000 tons monthly or more, if obtainable, up to 8,000 tons, at $5 50. This is thought to be a very advantageous arrangement for both parties. The Central Pacific Railroad is now using large supplies of Seattle, in addition to that received from the Rocky Mountains. Judging from these recent arrangements it is thought that the necessity for Sydney supplies will be correspondingly diminished during the balance of the year, and that consequently low prices are likely to rule for the large quantity of Australian now afloat and to arrive here within the next six months. Our market is now well supplied with Wallsend, not a little now here afloat, bought to arrive upon terms withheld. We cannot now quote large cargo spot parcels better than $9@9 25. Imports for the week embrace the following: per *Wellington* from British Columbia, 930 tons; *J. P. Bell*, 1,204 tons Seattle; *Berar*, 1,117 tons Newcastle, N. S. W.; *Hertfordshire*, 1,280 tons, from do; the *Mary L. Stone*, from Boston, 333 tons. We quote Bellingham Bay at $8 50; Coos Bay, $10; California Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively. Cargoes of Scotch and English Steam to arrive may be quoted at $9; Cumberland, $18@20; Nanaimo, $9 50@10; Seattle, $9 25@10; Sydney, $9@9 25 by the cargo. The ship *Aros Bay* from Glasgow, brought 609 tons Scotch. The *Shooling Star* from Nanaimo, 1,000 tons, and the *Penang*, 800 tons Newcastle, N. S. W.

Toledo, Ohio. August 2, 1875.

Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb. on cars.

Hocking Valley	$3 40	Massillon	4 20
Straitsville	3 40	Youghiogheny	5 00
Shawnee	3 40	Blossburg	7 00@7 50
" nut	2 90	Cumberland	7 00@7 50
Briar Hill	5 50	Connellsville coke	7 00

ANTHRACITE.

Grate, screened	$7 75	Stove, screened	$8 25
Egg, "	7 75	Chestnut "	7 75
Lehigh Lump	9 50		

40 cents to $1 per ton additional for delivery at retail.

Toronto, Ont. August 2, 1875.

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 56	2 42	2 86	3 18	3 39
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	51	72
‡ Philipsburg, N. J.	97	83	1 34	1 44	1 65
‡ Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 20	2 06	2 80	2 82	3 03
High Bridge, N. J.	2 40	2 20	2 80	2 79	3 09
Somerville and Raritan, N. J	2 80	2 60	3 20	3 19	3 49
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 95	2 75	3 35	3 34	3 64
¶ Jersey City, N. J., and New York, via Morris Canal	2 85	2 34	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR	3 30	3 10	3 70	3 69	3 99
§ Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

From Mauch Chunk to New York (towing limits) and Jersey City† via Lehigh Valley RR. and Morris Canal .. $2 36
From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R R. in connection with Pa. and N. Y. R.R. 2 59
From *Lackawanna Junction* to ‖*Weedsport* for *Rochester and Charlotte* 2 41
From *Lackawanna Junction* to *Sterling* for *Oswego, N.Y.* 2 58
* To this point for Syracuse the rate is 2 16
‖ To this point for all places between Rochester and Buffalo the rate is 2 59
* The rate to this point for Syracuse is 2 22

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re shipment from this point is 20c. less than above rate.

DELAWARE, LACKAWANNA AND WESTERN RR. Co., (Morris and Essex Division)

From Phillipsburg, N. J. to Newark $1 59
" " " Hoboken, (for shipment) 1 23
" " " " (for consumption) 1 80

Schuylkill Coals. per ton of 2240 lb.	From Pine Grove.,	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.
To *Port Richmond*, for shipment, via P. & R. R. R., Main Line	2 12	2 07	2 00	1 99	1 92
Philadelphia, Retail yards	2 22	2 17	2 10	2 09	2 02
Harrisburg, via Lebanon Valley Branch	1 35	2 02	1 95	1 94	1 87
Allentown, via East Pennsylvania Branch	1 70	1 65	1 58	1 57	1 50
Lancaster, and Points on Lancaster Branch, via R. & C. R.R	1 82	1 77	1 70	1 69	1 62
Dauphin, via Schuylkill and Susquehanna Branch	85	....	1 43	1 42	1 35
Slatedale Junction via Berks and Lehigh Branch	1 88	1 83	1 76	1 75	1 68
Lebanon, via Lebanon and Tremont Branch	96	....	....	....	....

From *Tamanend* to *Catawissa*, via Catawissa and Williamsport Branch Railroad 94
From *Tamanend* to *Williamsport*, via Catawissa and Williamsport Branch Railroad 1 39
* From *Port Clinton* to *Philadelphia* via Schuylkill Canal, including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of unloading) 1 69
* From *Port Clinton* to *New York*, within towing limits, " 53d street 2 71

For shipment via Main Road or Schuylkill Canal, one and one-half cents per ton per mile, and two cents per ton additional, to Port Carbon, Mount Carbon, Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

Coal sent to points on the Catawissa and Williamsport Branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamanend.

The rates of freight and tolls on lump and steamboat coal (except that sent to Richmond for shipment) will be twenty per cent., and on broken coal will be ten per cent. less than the above rates.

* The charge from Schuylkill Haven to Philadelphia or New York is 11c. additional to these rates.

On and after July 1th, the Drawback of ten cents per ton now paid on shipments of Anthracite Coal from Schuylkill Haven and Port Clinton, that have passed Fairmount Locks to Philadelphia and vicinity, will be discontinued.

The rates of toll on lump and steamboat coal via Schuylkill Canal (except that for New York and vicinity) will be thirty, and on broken fifteen, per cent. less than the above rates. On lump and steamboat coal for New York and vicinity the rate will be fifteen per cent. less than above rates.

OFFICE OF THE PA. & N. Y. RR. Co.,
BETHLEHEM, August 1, 1875.

On and after this date, rate on coal to Buffalo, Rochester and points west of Salamanaca on Atlantic and Great Western or Erie Railways; Watkins, for shipment on Northern Central Railway; Ithaca, for shipment, on Ithaca and Athens RR.; Auburn, for New York Central RR.; Weedsport, for Erie Canal; Sterling, for Lake Ontario Shore RR.; and Fair Haven, on Southern Central RR.; will be advanced on this road one cent per ton, making the rate between Coxton and Waverly, on through coal, via Erie Railway, including transhipment at the latter place, $1 50 per ton. ROBERT H. SAYRE,
President.

The Geneva, Ithaca and Athens Railroad Company.

Rates from State Line on a consignment of coal of not less than 25 tons of 2240 lb. will be as follows:

To Ithaca (local), 75c.; to Geneva (local), $1 50; to Geneva or Cayuga for Buffalo and Tonawanda, 92c.; Geneva or Cayuga for Rochester and Charlotte, $1.03; Geneva or Cayuga for Phelps Junction, for S. P. S. and L. O. S. R. R.'s, 92c.; Geneva or Cayuga for all other points on N. Y. C. R. R., $1 12

Rate from Lackawanna Junction to State Line on coal for all points on the G. I. & A. (excepting Geneva), and C. L. R. R's., $2; Ithaca (shipment), $1 40; for Geneva, $1 40. For all other points on the N. Y. C. & H. R. R. R., $1 40.

Rate from State Line to Van Ettenville for all points on the Horseheads Division of the U. I. & E. R. R., 34c. Rate from Van Ettenville to any point on said Division, 33c.

Rate from State Line to Ithaca, for Buffalo, Rochester, Syracuse, and all other points via Erie Canal, 50c.

Rate L. & B. Junction to f. o. b. boats at Ithaca for Buffalo, or other Canal points, $2 05 per gross ton.

Rate L. & B. Junction to Buffalo, Black Rock, Susp. Bridge, (via Geneva), all rail, $3 94 per gross ton.

Rate L. & B. Junction to Rochester, all rail $3 39 per gross ton.

Canal freights, Ithaca to Buffalo, $1 10 net ton; to Rochester, 75c. (subject to change).

Delaware and Raritan Canal.

Tolls and Steam Towage.
Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to New York, towing limits within 53d st. 74c.
" Greenwich " Bituminous 64c.
" " " Anthracite 69c.
" Lambertville " Anthracite 62c.
" Port Richmond " 68c.
" " " Semi-bituminous coal, 63c.
" Philadelphia " Cumberland " 58c.
" Trenton " Anthracite " 37c.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:
For Anthracite Coal 35c.
Bituminous and Semi-bituminous Coal. 35c.

Freights.

Per ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore and Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	2 00	....
Albany	*85	1 70	....
Amesbury, Mass	....	....	....
Bangor, Me	†1 35	1 85	1 20
Bath, Me	1 60	1 80	1 30
Baltimore	....	....	....
Boston, Mass	1 60 & 3c.	1 75	1 25
Bridgeport, Ct	*85	1 50	80
Bristol, R. I.	....	....	90
Cambridgeport, Mass	1 60&3c.	....	1 25
Derby	....	1 60	....
Dighton	....	1 60	§1 25
East Cambridge	1 60&3c.	....	....
Fall River	1 35	1 50	90
Hackensack	....	....	....
Hallowell, Me	....	....	....
Hartford	....	....	1 25
Hoboken	†85	1 30	....
Hudson	....	1 60	....
Jersey City	....	1 30	40
Lynn, Mass	†1 60	.. ..	†1 25
Middletown	....	....	1 10
Mystic	....	....	....
Newark	....	....	....
New Bedford	1 40	1 50	90
Newburyport	....	1 90	1 35
New Haven	*85	1 50	90
New London	1 35	1 50	85
Newport	1 35	1 50	90
New York	85†	‖1 40	40
Norfolk, Va	75	60	....
Norwalk	....	....	90
Norwich	....	1 65	90
Pawtucket	1 40‡	....	‡100
Philadelphia	....	1 00	....
Portland	1 50	1 75	1 20
Portsmouth, N. H.	1 60	1 85	1 40
Providence	1 35	1 50	90
Petersburg, Va	....	90	....
Portsmouth, Va	....	....	....
Poughkeepsie, N. Y.	....	1 50	....
Richmond, Va	95	80	....
Rockport	....	....	....
Saco	....	....	....
Sag Harbor	....	....	1 00
Salem	1 65	1 75	1 25
Salisbury Pt., Mass	....	....	1 50
Savannah, Ga	....	1 50	....
Stamford	*85	....	85
Stonington	....	....	....
Taunton	.. .	...	1 30
Trenton, N. J.	....	....	....
Troy	....	....	....
Warren, R. I.	....	....	90
Washington, D. C.	80	....	....
Wareham	....	1 65	....
Weymouth	....	1 80	....
Wilmington, Del	....	85	....
Wilmington, N. C.	....	1 50	....

* And discharging and towing, ‡ And towing.
† And discharging.
§ 3c. per bridge extra.
‖ The rate to this point by barge is $1 60.

Erie Canal.

	per 2240 lb.
Hoboken to Buffalo	75c.
" Rochester	70c.
" Oswego	65c.

The above rates are exclusive of harbor towing, trimming, unloading and tolls.

Freight on Nova Scotia Coals.

Pictou, Nova Scotia, to			New York	$1 75
"	"	"	Portland, Me	1 90
"	"	"	Montreal, Canada	2 35
"	"	"	Quebec, "	180 to 2 00
"	"	"	Halifax, N. S.	1 25

Pilotage for vessels of from 80 to 150 tons, $6 inward and $4 outward. From 150 to 1000 tons. 10 to $17 inward and $6 to $12 outward. Vessels of 1000 tons and upwards, 2c. per ton inward and 1½c. per ton outward.

Towage 3c. per ton. Trimming 3 hatch vessels, 6c per ton. Two hatch vessels 7c. per ton.

Towing.

From foot of 23d Street, East River, and *return*, *per ton*.

	cts.		cts.
Bridgeport, Conn.	33⅓	New Haven and Norwalk, Conn.	33⅓
Hartford and Stonington, Conn.	75	New London, Conn.	60
Norwich, Conn	68	*Derby, "	33⅓
Stamford, Conn., per boat	$75	Harlem, N. Y., per boat.	$18
Whitestone, L. I.	$30	Glen Cove, L. I.	50

	cts.
Manhattanville, via Hudson River, per ton	8
Harverstraw and Peekskill, via Hudson River	16
West Point and Cold Spring " "	17
Rondout " "	23
Yonkers, boats of 100 tons capacity " " per boat.	$15
Sing Sing and Peekskill " " " "	20

* $50 per boat extra is charged for towage to this point.

Boats having less than 200 tons will be charged the same to Eastern points as if carrying that quantity.

THE BRITISH COAL AND IRON TRADES.

LONDON, July 24, 1875.

The iron trade of England and Wales, with but few exceptions, shows no improvement, and prices have a downward tendency. Stocks of pig iron have accumulated and continue to accumulate in the several districts, and buyers are showing considerable caution. In the North of England, although the make is not so great as a month ago, yet stocks are increasing and prices have declined fully 1/ per ton during the week, and it is feared that other furnaces will have to be blown out. In Wales, trade continues as dull as for weeks past, and it is thought that a further reduct on of wages will have to be made. The demand for rails is very small, although some of the Bessemer steel works are well employed on foreign orders.

The following are the leading quotations of iron:

——	Tees, f.o.b.	Barrow, f.o.b.	Liverpool, on trucks.
No. 1 Pig	56/	*80/	70/6
No. 2 "	54/	*77/6	....
No. 3 "	49/	*75/	68/
No. 4 Forge	47/	75/	65/
Common Bars	160/		....
Rails	140/@147/6		170

* Bessemer Pig.

Common bars in South Staffordshire, 8£, and marked bars £10; 12/6 extra for Lord Dudley's.

THE COAL TRADE.

The coal trade is reported very quiet in all the districts, with the majority of the collieries working but partial time. There is but little profit in the business, and in many cases it is being carried on at a loss. Tyne coals f. o. b., are quoted at 12/@16/ for housholds; 12/@13/ for steam; and 8/ 6d.@10/ for nuts. Coals are very abundant in Wales and prices very low. The Admiralty is purchasing largely of these coals. Gas coals are quoted as follows: Tyne Main and Ushaw Moor, f. o. b. Newcastle-on-Tyne, 10/; and Hetton, f. o. b. Sunderland, 10/ 6d.

THE LABOR MARKET.

The collieries of the South Staffordshire and East Worcestershire districts have agreed to continue work at the proposed reduction of wages in consequence of the drop in the price of coal. At the annual meeting of the West Yorkshire Miners' Association, at Wakefield, on the 19th inst., the financial statement presented showed that the receipts of the society for the past year were £44,434 15/ 6d.; the expenditures, £42,183; and the balance in the hands of the Treasurer, £14,385. Several of the leading iron firms of Rotherham have given notice of a 10 per cent. reduction of wages, to which the men have made no reply, although they are considering the question. The Sheffield iron masters are likely to make the same demand from their men. The threatened strike in the Oldham and Ashton districts looks as though it would be averted. With the exception of three or four small works on Teesside and in Sunderland, the ironworkers of the North-of-England have submitted to the reduction of 6d. per ton, and puddlers are now paid 9/ per ton, and other wages are in proportion.

THE MINERS' NATIONAL UNION.

At a meeting on the 15th inst., Mr. WM. PICKARD, of Wigan, was elected Vice-President; Mr. WILLIAM CRAWFORD, Durham, was appointed Secretary; Mr. DAVID MOULSON, South Yorkshire, Treasurer; Mr. MACDONALD, M. P., Scotland, Mr. FORMAN, Durham, Mr. BURT, M.P., Northumberland, Mr. CASEY, South Yorkshire, and Mr. WILLIAM PICKARD, Wigan, members of the Central Board. It was decided that 12/ per day and second-class railway fare should be allowed each member of the Central Beard when attending its meetings.

TRIAL OF A NEW PROCESS FOR SMELTING IRON.

Some important experiments have been conducted at

the Elsecar Ironworks, of Messrs. D. H. and GEORGE DAWES, during the past week, the object being the trial of a new process for the smelting of iron. The experiments have, so far, been most satisfactory, and when they are completed the process will be made public. In the meantime, suffice it to say that the principle now being tried will, if finally successful, cause, perhaps, the greatest revolution which has ever been made in the iron trade.

THE NORTH-EASTERN RAILWAY COMPANY.

Quite an antagonistic feeling exists between freighters of the North-of-England and the great railway monopoly, in view of which a rival line is projected destined to traverse the richest and most remunerative part of their system. The allegations made against the railway company by their customers are, that they have failed to provide the necessary facilities to meet the requirements of the mineral traffic, and that they have imposed, and still maintain, in violation to a pledge given to the contrary, rates and charges of an exorbitant character. The directory is composed of 21 members, of which 10 are large freighters, leaving a majority of one in opposition.

THE PHOENIX BESSEMER COMPANY

is likely to be resuscitated by raising sufficient preference capital (at 10 per cent. interest) to pay 12/ on the pound to the creditors, to which the creditors' committee have agreed.

FAILURE OF A LARGE COAL FIRM.

The failure is announced of Messrs. LAMBERT, BROTHERS & SCOTT, of the London Coal Exchange, with liabilities at £160,000. The firm are ship and colliery owners, and large shippers to colliery stations abroad.

SCOTLAND.

The Glasgow market is, as usual, the theatre of speculative transactions which throw but little ligh on the condition of actual business. The stock is small, and is firmly held by the "bulls," who resolutely abstain from selling, knowing well that should others attempt to do so for early cash they will probably be able to force them to cover at holders' prices. Trade, however, is so bad, and the business done for some time past has been so small, that great difficulty will be experienced in maintaining prices—a proof of which is afforded by the offers to sell under quotations for one month's delivery. Makers' iron, influenced by the accumulation of stocks, is quieter, and can be bought under previous quotations. The greater part of the business of the week, in warrants, has been done at about 60/ for cash, and for various dates, open and fixed. Makers' prices are as follows: G.m.b., at Glasgow, No. 1. 62/, No. 3. 60/ 6d.; Gartsherrie, No. 1 68/ 6d., No. 3 62/ 6d.; Coltness, No. 1 69/, No. 3 65s.; Summerlee, No. 1 66/ 6d., No. 3 62/; Langloan, No. 1 67/ No. 3 62/; Carnbroe, No. 1 64/, No. 3 62/; Monkland, No. 1 62/, No. 3 61/; Clyde No. 1 64/ No. 3 61/ 6d.; Govan, at Broomielaw, No. 1 62/ 6d., No. 3, 61/; Calder, at Port Dundas, No. 1, 68/, No. 3, 62/; Glengarnock; at Ardrossan, No. 1, 67/ 6d, No. 3, 62/ 6d.; Eglinton, No 1, 62/, No. 3, 60/; Dalmellington, No. 1, 61/, No. 3 59s; Carron, at Grangemouth, No. 1, 67/ 6d; Shotts, at Leith, No. 1, 68/, No. 3, 64/; Kinneil, at Bo'ness, No. 1, 62/ 6d., No. 3, 59/ 6d. About 120 blast furnaces have on an average been in operation in Scotland since the beginning of the year, and they have made a total output exceeding 500,000 tons, which is much under the average production of the past three or four years. Nearly a fifth of the whole quantity has had to be placed to stock, and though the amount in the public stores is comparatively small, makers deem it necessary to proceed with great caution in the present backward state of the trade. The number of furnaces in blast has therefore, quite recently been considerably reduced. A very limited inquiry is made for home purposes, and the exports of pigs and of manufactured iron last week were comparatively small. Probably the holidays in some measure accounted for this. The shipments of pig iron from Scotch ports for the week ending the 17th inst., amounted to 9,833 tons, being 111 less than in the corresponding week of 1874, and about 4,000 tons under those of the previous week. Several months have, however, elapsed since the exports fell below those of last year until the past week. The imports of Middlesbrough pigs at Grangemouth for the week were 2,200 tons, being considerably under those of the corresponding week of last year. The malleable trade continues dull, with only a fair amount of employment at a few works; but ship-plate and pipe makers have a considerable number of orders on hand. The fleet of vessels trading with timber from Quebec to the Clyde have about finished discharging their cargoes at Greenock, and, as the intention is to send them out laden with coals, a number of very good orders have been obtained for the purpose. The coal-shipping trade generally is, indeed, pretty good, and it is mainly upon it, at present, that coalmasters rely.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Aug. 6, 1875.

American Pig.—We note sales of mixed brands of Thomas iron, aggregating about 1600 tons, at $26 for No. 1X; $25 for No. 2X, and $23 for forge; also about 600 tons of North River irons at $26 for No. 1 foundry, and $21 50 for white and mottled. As we predicted last week, the Thomas Iron Company is openly quoting on the basis of $26 for No. 1 foundry, giving as their reason for so doing that that figure was freely offered to their customers in a private way by parties claiming to hold firmly at $28. We have been satisfied for some time that such was the condition of the market, and have intimated as much to our readers. In addition to the sale of 3,500 tons of pipe iron reported in our last, we are reported a sale of 600 tons, the particulars of which are kept private. Judging from offers of good pipe irons that have been made, the business that is doing must be at very low figures. There are negotiations going on for several thousand tons more, which will probably be consummated during next week. There are several of the leading Lehigh companies that are asking $27 for No. 1 foundry iron, but with Thomas reduced to $26, they will have to confine themselves to a very limited business or openly quote at the same figure, although there may be cases with old customers who think they can use but one iron, where an advance of 50c. per ton might be secured. We quote No. 1 foundry at $26@$27; No. 2, $24@$25; and forge, $22 50@$24.

Scotch Pig.—The arrivals during the week have been about 500 tons and sales about 300 tons, of which Eglinton sold at $28@$30. Prices in Glasgow are a little weaker, and we hear of steamer freights as low as 5/ per ton, although it was said that an agreement had been entered into to take nothing less than 12/6. The consumptive demand is only a hand-to mouth one, and if any quantity were pressed on the market, it would not bring within two dollars of the cost of importing. The Glasgow market, which has been sustained for some time by considerable unprofitable foreign business, is again showing some weakness, and importations can be made at about the following figures for iron laid down here: Eglinton, $28; Glengarnock, $30 50; and Coltness, $31. We quote Eglinton $29@$30, and Glengarnock and Coltness at $31@32.

Rails.—There have been no further sales reported, although there is a fair amount of inquiries. American iron at mills may be quoted at $47@$50. Steel rails are more firm than they were, as none of the mills will be able to work on new orders before September, all being fully engaged. We quote at $74@$75 at mills.

Old Rails.—There have been no transactions, although there is some inquiry. We quote at $26@26 50.

Scrap Iron.—We note sales aggregating 300 tons of cast on private terms. Wrought is very quiet, and quoting at $30@$31, for No. 1.

Muck Bar.—We note a sale of 150 tons, at Scranton, at $43.

Baltimore. Aug 4, 1875.

Specially reported by R. C. HOFFMAN & Co.

Baltimore Charcoal	$30@35	Anthracite No. 2	$25@26
Virginia Charcoal	30@35	" No. 1	23@24
Anthracite No. 1	27@28	Mottled and White	20@22

Boston. Aug. 5, 1875

By our Special Correspondents.

As for pig iron we can say nothing new. Your present quotations are about right; the sales on the spot are only in small lots, say from 5 to 20 tons. Scotch iron is not inquired for. Charcoal Pigs are sold only to a very limited extent from store, at $35 to $38 per ton, and none being moved this month. We do not hear of any move in old or new rails—in fact, trade is so quiet that it is hardly worth attention.

The *Shipping List* says: "We have no movement to report in Scotch pig, and it seems to be entirely neglected. Holders still ask $33@36 per ton, but these figures are nearly nominal. There is a very limited demand for American pig, and although we continue to quote at $28@$32 per ton, according to quality and quantity, we hear of a few rounds lots Allentown and other No. 1 brands being placed at $29@30 per ton. There continues to be a dull trade in refined bar, with sales principally on a basis of $58 per ton. Common bar has been moving at $53@54 per ton. Rails are without movement of importance. Sheet iron remains quiet."

Imports of pig iron from Jan. 1 to July 31.

	1874.	1875
From Great Britain, tons	2475	1350
Coastwise.	6963	8347

The *Commercial Bulletin* says: "Copper here is very dull but firmly held at 23c. for spot and futures, through the influence of the New York ring. The manufacturers are supplying their wants out of old metals, which continue to move forward steadily, though not in heavy lots. For manufactured we quote new sheathing 30c; bolts and braziers 31c.; yellow metal bolts 28c.@29c.

"LEAD is unchanged, the demand being still very slack, with holders rather more freely canvassing for sales. Foreign is a trifle lower. We quote pig 6c. for domestic and 6⅛@6¼c. for foreign; sheet and pipe 9¼c'y, tin-lined pipe 10½c.; bar lead 6½c., less usual trade or 10 per cent discount.

"ANTIMONY is firm with very little inquiry, quoting from 13@13½c. as to lots bought.

"SPELTER is strong and extremely dull at $7 55, 30 days, and $7 40 prompt cash, all currency. Silesian is unchanged, quoting nominally $7 30.

"TIN continues to rule very dull, with prices lower and tending down in sympathy with Continental advices. We quote Straits 18¼@18¾c. gold. Plates are active; we quote charcoal I. C., $9 50@10; Coke $7 75@8; and Terne at $7 50@11."

Cincinnati. Aug. 3, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

CHARCOAL.			
Hanging Rock, No. 1 Foundry	$26 00@27 00	4 mos
" No 2, "	25 00@26 00	4 mos
" Mill	24 00@25 50	4 mos
Tennessee No. 1, Foundry	26 00@	4 mos
Tennessee, No. 2, "	25 00@	4 mos
" Mill	24 00@25 00	4 mos
Missouri, No. 1, Foundry	@	4 mos
STONE COAL.			
Ohio, No. 1, Foundry	24 00@25 00	4 mos
" No. 2, "	23 00@24 00	4 mos
Ohio Mill	23 00@24 00	4 mos
Missiouri, No. 1 Foundry	27 00@28 00	4 mos
" No. 2, "	26 00@27 00	4 mos
" Mill	26 00@27 00	4 mos
CAR-WHEELS.			
Hanging Rock, C. B	40 00@50 00	4 mos
Tennessee "	30 00@35 00	4 mos
Missouri "	35 00@38 00	4 mos
Alabama "	30 00@35 00	4 mos
BLOOMS.			
Charcoal	70 00@ 80 00	cash
SCRAP IRON.			
Cast	65c.@ 90	cash
Wrought	1 00@1 40	cash

Chicago. Aug. 2, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Our pig iron market remains quiet, the demand being confined to small lots. We quote:

No. 1 Coltness	$41 00@
No. 1 Gartsherrie	40 00@
No. 1 Summerlee	39 00@
No. 1 Glengarnock	38 00@
No. 1 Eglinton	37 00@
Wareer's "American Scotch"	34 00@
Massilon No. 1 Foundry	33 00@
No. 1 Grand Tower Mo. ores (Bituminous)	30 00@
No. 2, " " "	28 00@
No. 1 Mill	26 00@
Union "A" 1 (Anthracite)	28 00@
Union "B" 1 (Anthracite)	27 00@
No. 1 Lake Superior (charcoal)	30 00@
No. 2 Lake Superior "	29 00@
No. 3 Lake Superior "	30 00@
No. 4 Lake Superior "	32 00@
Bessemer Steel Rails	73 00@
New Iron Rails	50 00@
Old Rails	28 00@

Cleveland, Ohio, Aug. 2, 1875.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore:

FOUNDRY IRON.	
No. 1, Lake Superior Charcoal	32 00@
No. 2. " "	31 50@
No. 1, Anthracite	29 50@
No 2, "	27 50@
No. 1, Bituminous foundry	29 00@
No. 2, "	27 00@
American Scotch, No. 1, Cherry Valley	31 00@
" " B—1, " "	28 50@
" " No. 2, " "	27 50@
No. 1, Massilon	30 50@
B—1, "	27 50@
No. 2, "	25 50@
CAR WHEEL AND MALLEABLE IRON.	
No. 3 Lake Superior Charcoal	31 00@
No. 4 " " "	32 50@
Nos. 5 and 6 " "	33 00@
BESSEMER IRON.	
Nos. 1 and 2 Lake Superior Charcoal	31 75@
FORGE IRON.	
No. 1, Gray	24 50@
White and Mottled	23 00@

The pig iron market remains unusually dull, with but little hope of immediate improvement. Orders are very light, being just sufficient to cover immediate wants, and inquiries have fallen off materially within a few days. Still there are strong hopes among holders that a more brisk demand will soon be inaugurated.—*Manufacturing and Trade Review.*

Louisville. Aug. 2, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

The market is very dull, but without change in price. The usual time 4 months is allowed on the quotations below.

HOT BLAST—CHARCOAL.	
No. 1 foundry, from Hanging Rock Ores	$27 00@28 00
No. 2 " " "	25 00@26 00
No. 1, Mill, from " "	23 00@24 00
No. 1. foundry, from Alabama, Georgia and Tennessee ores	25 00@26 00
No. 2, foundry, from Ala., Geor'a and Tenn. ores	24 00@25 00
No. 1, Mill, from " " " " "	23 00@24 00
HOT BLAST—STONE COAL AND COKE.	
No. 1, foundry, from Hanging Rock ores	25 00@26 00
No. 2, " " " " "	24 00@25 00
No 1, Mill, " " " " "	23 00@24 00
No. 1, foundry, from Ala. Ga. and Tenn. ores	25 00@26 00
No. 2, " " " " "	24 00@25 00
No. 1, Mill, " " " " "	23 00@24 00
No. 1 foundry, from Missouri ores	27 00@28 00
No. 2 foundry, from Missouri ores	26 00@27 00
Fo. 1 Mill, from Missouri ores	26 00@27 00
COLD BLAST—CHARCOAL.	
Car Wheel from Hanging Rock ores	35 00@40 00
" " Tennessee "	30 00@33 00
" " Alabama and Georgia ores	30 00@35 00
" " Kentucky ores	28 00@35 00

Pittsburgh. Aug. 2, 1875.

Specially reported by A. H. CHILDS, Esq., Commission Merchant for the sale of pig iron, blooms, ore, etc.

The market is extremely dull, with some tendency to lower prices. Quotations remain nominally unchanged, but buyers take hold sparingly, and claim they can get concessions from parties who are anxious to realize.

QUOTATIONS.

No 1. foundry	$27 00@28 00—4 mos
" 2. "	25 00@26 00—4 mos
Gray Forge	24 00@25 00—4 mos
White and mottled	22 00@23 00—4 mos

Hot blast charcoal ..... 28 00@30 00—4 mos
Cold blast charcoal..... ..... 35 00@40 00—4 mos

PIG IRON.—Trade continues quiet and the feeling prevails in well-informed circles that there will be no material or decided improvement much this side of next month; however, it depends mainly upon the action of the mills. If they should continue to adhere to the hand-to-mouth policy—buy only to meet immediate wants—business will remain about the same as it has been since the 1st of July; but there is a possibility that some of them—we refer particularly to those who are impressed with the belief that prices are destined to go higher—may buy a two or three months' supply in the meantime, and if so, an effort will be made by producers to put up prices. Manufacturers generally, while conceding that pig iron is low, and that it is not likely to go lower, cannot see their way clear to pay an advance; and, furthermore, the outlook for the product is not considered as encouraging as it was a week ago, in consequence of the continued rains, which have seriously damaged, if not destroyed, the crops in some sections of the country. It is true, stocks are small, and have been gradually going down for a year or more past, and the production is comparatively light; both facts are advanced as strong points in favor of higher prices, but for the reason stated, we do not regard the outlook as favorable in this respect as it was a few weeks ago. Twenty-four dollars, four months, is still regarded as the ruling price for standard forge irons, and while some producers have their ideas from one to two dollars per ton above this figure, the mills have been able as yet to obtain about all the pig they needed at quoted rate; however, very few contracts could be made for future delivery at the price in question as producers very generally are impressed with the belief that an advance of at least one dollar per ton is only a question of a little time. Foundry irons continue exceedingly dull but unchanged.

MANUFACTURED IRON.—There is nothing particularly new or important to report excepting that the outlook is not as encouraging as it was, in consequence of the recent continued heavy rains in many parts of the country, which it is feared have seriously damaged the crops. It was the promise of an abundant harvest that led our manufacturers to expect an active Fall trade, but if the damage to the crops shall turn out as serious as is now feared, these expectations will not be fully realized. Prices remain unchanged; merchant bars, Pittsburgh classification, $2 25@2 30; eastern classification, $2 35 @2 40.

PIG METAL SALES REPORTED FOR THE WEEK ENDING AUG. 5, 1875.

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

50 tons No. 1 foundry.....$27 00—4 mos.
300 tons foundry..... 25 00—4 mos.
760 tons gray forge ..... 24 00—4 mos.
400 tons gray forge ..... 24 00—5 mos.

ANTHRACITE.

100 tons gray forge.....$24 00—5 mos.
70 tons white and mottled..... 22 00—4 mos.

CHARCOAL.

70 tons No. 1 foundry, H. R.....$28@33—4 mos.
20 tons No. 1 foundry, H. R..... 30 00—cash
25 tons silvery, H. R ..... 26 50—4 mos.
20 tons cold blast, Tennessee..... 32 50—4 mos.

BLOOMS.

30 tons Mo. scrap..... $65 00—4 mos.
American Manufacturer.

San Francisco, Cal.

From the *Commercial Herald* of July 22d, 1875.

The receipts of Pig Iron have been large during the week and although the bulk of the invoices at hand was sold prior to arrival, the market droops and prices favor the buyer. The ship *Aros Bay* from Glasgow, brought 800 tons Scotch Pig Iron, one half of which reported sold prior to arrival. The ship *Mary L. Stone*, from Boston, brought 315 tons American Pig Iron, and the Oregon steamer brought 23 tons, the first arrival in months from the Oswego furnace now rebuilt. We note sales of 1,200 boxes I C. Tin Plate, Charcoal, private—say $11; 4 tons Australian Block Tin at 22c.

METALS.

NEW YORK, Friday Evening, Aug. 6, 1875.

There is a fair jobbing business doing in metals, although there is comparatively nothing doing in a wholesale way. The inquiry, however, has largely increased, and a much better trade is looked for next month.

Messrs. JAMES & SHAKSPEARE, of London, under date of July 23, say:

"Quotations for most metals are nominally lower; but although a few parcels of goods occasionally offer at reduced rates, the bulk of the stocks held in this country is virtually out of the market, except at a tolerably good advance on present list prices. As has now been the case for some time past, business is restricted to the carrying out of mere retail operations, both consumers and exporters confining their purchases within the narrowest possible limits, and refusing to deal in anything more than is wanted for their immediate requirements. Money is cheap and abundant, but everyone is hoarding his resources, and until the distrust (so generally prevalent) wears away, we can scarcely look for much improvement in trade"

Gold Coin.—During the week past gold has ranged from 113¼ to 114, and closed to-day at 113⅞.

Bullion.—Fine silver bar is quoted at $1 22@$1 23, gold, per ounce, and fine gold bar, at ¼@¼ per cent. premium. The advance in the price of silver was caused by the Government buying largely of coin silver at $122¼.

Copper.—There is more business during this month than last, which is accounted for by the fact that more manufacturers are bare of stock, and although the business is still a hand-to-mouth one, yet the aggregate is necessarily larger. It is said that some manufacturing establishments have fair orders for their wares, to be delivered later in the season, but are delaying to purchase their ingot copper, hoping that there may be a decline, and believing that copper cannot be higher. If the Fall business should be a fair one, and many should adopt this policy, they might well look for an advance. Yesterday's cable information quoted Chili Bars, in London, at £79/10, which is a little better than last week. The sales here during the week have aggregated from 300,000 to 400,000 lb, at 23c., at which price it is now quoted for lots of 25,000 to 50,000 lb., and for smaller lots 23¼c Baltimore is quoted the same as Lake.

ERNEST W. G. MURRANT, of London, under date of July 23, says:

Chili.—Some little delay has occurred in receiving the Cable advice for first half July, and in anticipation of their reaching a full average, bars were easy in the early part of the week; it is devoutly to be wished that the public stocks are not going to be materially augmented by exceptionally heavy shipments during the remainder of the year, as if so, a reduction in values, not, perhaps, inconsiderable, might very possibly occur; it is, however, well to look the present position fairly in the face, as whatever happens, the current year will have to be classed with those which have been unfortunate for all who have been holders to any extent; and the present action of a great commercial concern will, if successful, render a certain class of transactions difficult, if not dangerous to the parties carrying them out. The accumulation of stock at the moment is so trifling that it need not be noticed, except for the purpose of pointing out that France cannot be expected to assist in its decrease, as formerly; the "bears" will no doubt draw comfort from this fact. The reported sales of the week are 150 tons of g.o.bs, and named brands at £79 10/ to £80 10/ for cash and prompt; but the leading feature has been a disinclination to operate, except in a retail manner. Australian sympathizes with Chili, the policy of consumers appearing to be that of waiting for easier prices.

Tin.—Straits is quoted at 18¼c.; L. & F. 18¼c.; and Banca 23c. prices all gold, and for jobbing lots. A fair jobbing business is being done. Tin plates are moving fairly in a small way. Charcoal tins are quoted at $8@$8 25 gold, and ternes $7 25@$7 50; coke tins, $6 75@$7, and ternes $6 25@$6 75. Yesterday's cable information quoted Straits at £79 10s. in one case, and £80 10s. in another, as compared with £77 last week. The Singapore market was quiet, at $21¾ per picul yesterday. The advance in London was brought about by making public the very large deliveries during July, which are reported to have been 1,500 tons

Mr. MURRANT says: Straits has, considering all the circumstances, maintained its value pretty well in the past week, although there seems to be an utter absence of "go" in the article, and transactions in it threaten to resolve themselves into an unpleasant copy of those in its sister metal, copper; but there will probably always be a balance of speculation (in ordinary times) in favor of tin, through the greater ease with which the latter can be held by small operators. However, on looking at its position from an unprejudiced point of view, it requires a rather sanguine temperament to come to the conclusion that the bottom has been reached; the week's transactions have been 150 tons Straits, and 80 tons Australian at 75/ to 79/ 6d. for cash and forward delivery.

Lead.—The sales during the week have been about 175 tons of Domestic, at 5·95c gold. As we predicted some time ago, business continues dull, although some anticipated a very lively trade during August, while we could see nothing to bring about the demand. Foreign is very quiet and nominally at 6¼c. gold.

Spelter and Zinc.—Domestic spelter continues very quiet at 7¼c. currency, 30 days, and 1 per cent. discount for prompt cash. There is nothing doing in Foreign, which is nominally quoted at 17½c.@7¼c. gold. Sheet zinc is quiet at 8¾c.@9c. gold.

Antimony is moving in a jobbing way at 13c.@13¼c. gold.

Quicksilver.—This market is quoted at 75c., and San Francisco at 70c gold per lb. The London quotation is £10 per flask of 75 lb.

The San Francisco *Commercial Herald* of July 22, says:

There has been less doing since the departure of the steamer for China on the 15th inst. Present price firm at 70c. with sales of several lots. The particulars of shipments per *Oceanic* we published last week bring no additions to our figures. The shipments since have been 132 flasks rated at $7,068.

FINANCIAL.

New York Stocks.

Aug. 6, 1875.

The unfavorable weather which has continued during nearly all of the week has given quite a check to the buoyant feeling characteristic of the operations of the Stock Board last week. Reports of damage to the crops by the recent rains have slightly affected the stock market, and transactions for the week have been materially restricted, the market closing yesterday, however, with prices pretty generally maintained. Our ability to furnish a very large supply of cereals, for any demand which may be made upon us from abroad, will not be materially affected by the recent storms, and, indeed, the corn crops will be benefited

Mariposa Land and Mining Company's stock exhibits a decline of about $2 per share as compared with our last quotations, with sales of some 3,000 shares; information from the mine, under date of July 23d, states that the tunnel struck the wall rock of the Mother Lode of California, composed of barren quartz heavily stained with copper salts, and similar in character to that of the Pine Tree gold mine. The tunnel heading was in 983 feet, and 400 feet below the surface. A vein of coal has been discovered near the northern boundary of the property.

The coupons and interest on the following securities are payable during the month of August at the various places annexed: Central R. R. of N. J., 1st mortgage bonds, new, 1890, New York; Chesapeke and Ohio Canal repair bonds, at Baltimore; Cumberland Coal and Iron Co. 2d mortgage bonds, at the office of the Cons. Coal Co., N. Y.; Joliet Iron and Steel Co., by National City Bank: Morris and Essex 2d mortgage construction bonds, 1889, by the Del., Lack., and Western R. R.; North Chicago Rolling Mill Co., 2d mortgage, National Bank, Boston; Pennsylvania Coal Co., 1st mortgage 7 per cent., at the company's office, N. Y.; Quicksilver Mining Co. (due in July), at company's office, New York; St. Louis and Iron Mountain R. R, by H. G. MARQUAND, New York; Vulcan Iron Works, Chatanooga, Tenn., Third National Bank, N. Y.; United Canal and R. R. Co.'s of N. J., at the company's office, N. Y. This stock was quoted at the close of business yesterday 128¼ bid.

The dealings in R. R. mortgages, especially those of dividend-paying roads, during the week have been very large, the sales of the various bonds of the N. J. C R. R. Co. alone amounting to $134,000 for the week. No doubt these investments are stimulated by the very low rates commanded by money, and also by the desire to invest in something of undoubted security which will yield a fair rate of interest.

The Pennsylvania Coal Co. have announced a quarterly dividend of 5 per cent, payable August 2.

QUOTATIONS AND SALES OF STOCKS:

	Highest	Lowest	Closing	Shares
Pennsylvania Coal Co.....	—	—	*272	
Consolidation Coal Co.....	—	—	48⅞	—
Spring Mt. Coal Co.....	66	65	65½	180
American Coal Co.....	—	—	60	—
Maryland Coal Co.....	—	—	19	—
Cumberland Coal and Iron Co.....	—	—	116	—
Del., Lack., and West. RR. Co.....	120¾	119¾	120¾	1266
Morris and Essex RR	102½	102	102¾	378
New Jersey Central RR. Co.....	110½	109	109⅝	1161
Delaware and Hudson Canal Co...	120	119⅝	119¾	439
Quicksilver Mining Co. pref'd.....	21¾	21	21⅛	300
" " " Common..	—	—	21	200
Mariposa Land & Min. Co. various.	13¼	11	11	3100
St. Louis & Iron Mountain RR....	—	—	18	—
Lehigh & Wilkes-Barre Coal Co....	—	—	—	—
Total Shares sold ..				7024
Sales for the week previous				10250
Decrease				3226

* Ex-dividend.

The following are the sales of bonds for the same period:

	Sales	Price
Ches. & O. R. R. 6s, 1st Mtg.....	——	..... — @ 40
" " " coupon on	1,000	..... — @ 40
Central RR. of N. J. 1st Mtg. N..	15,000	..... 112⅞@*109
" " " 1st Cons.....116,000		..... 107 @105
" " " Cons. Convt.	1,000	..... —— @109
Am. Dock Imp. Bonds.....	2,000	..... —— @102
Del. and H. C., 1st Mtg. Reg. 1894,	7,000	..... —— @107⅜
Del. and Hudson Canal, 7s, 1894,	39,000	..... 107⅞@107¾
Del., Lack. & W. R. R., 7s, conv..	——	..... —— @110
" " " " 2d Mtg..	——	..... —— @111
Morris and Essex, 1st C. gold.....	2,000	..... —— @104
" " 2d "	1,500	..... 106@107
" " Construction ..	9,000	..... 102@102*
St. Louis & Iron Mount'n 1st Mtg.	——	..... —— @ 89
St. Louis & Iron M'tn, 2d Mtg.	——	..... —— @ 49
Total Sales.....	$193,500	

Quotations in the last column, in the absence of sales, represent the latest prices bid.

* Ex-interest.

Philadelphia Stocks.

PHILADELPHIA, August 6, 1875.

A moderately active business has been done at the Philadelphia Stock Market during the week, with quotations fully maintained. The market was firm, closing at prices given below.

A dividend of 2 per cent., equal to $1 per share, has been declared by the Pennsylvania R. R. Co., on all stock as registered on the books of the Company on July 31st, at 3 o'clock. This dividend will be paid out of the earnings of the last three months, and is the first departure from their long-established plan of declaring dividends semi-annually.

The Philadelphia and Reading Railroad Company gives notice that, in conformity with the stipulations in the general bond relating to the two millions sterling 6 per cent. improvement mortgage bonds of that company, 212 bonds of £200 sterling each, aggregating £42,400, or $212 000 in gold, to be paid off at par on the first of October next, either at the office of the Company in Philadelphia, or at MCCALMONT BROTHERS & Co., London, were drawn by lot on the 16th of July, interest

on each of said bonds drawn ceasing on the first of October.

Lehigh Valley receipts and allotments were quoted at the close at 61@61¼.

We note a sale of $500, of the Ithaca and Athens R. R. Co. 1st mtg., 7s. at 95.

The following were sold at auction on the 3d inst.: 200 shares Great American Oil Company, at .01; 500 shares Excelsior Oil Company, at .01; 300 shares Oil Creek and Cherry Run Oil Company, at .01; 300 shares Western Pennsylvania Oil Company, at .05; 100 shares Union Kaolin Co., at .01.

Coupons and interest due during August are payable on the following securities in this city: Catawissa R.R. first chattel and new mortgage, Delaware and Raritan Canal Co., Huntington and Broad Top R. R. 2d mortgage and gold coupons, Lykens Coal Co., Morris Canal 2d mortgage by the L. V. R. R. Co., L. C. Nav. Co Registered Loan of 1867. The quarterly dividend period of this company occurs in August.

QUOTATIONS AND SALES OF STOCKS:

	Highest	Lowest	Closing	Shr's
Catawissa RR.	20¼	20	20	300
" " Preferred	—	—	42¾	—
" " New Preferred	40	39¼	40	5
Huntingdon and B. T. RR.	—	—	7⅛	—
" " " Pref'd.	—	—	14	—
Lehigh Valley RR. Co.	62¼	61¼	62	1129
Little Schuylkill RR	—	—	50	59
Minehill R'd	54	53⅛	53¾	19
Nesquehoning Valley RR.	—	—	56¼	9
Northern Central RR.	30	29¾	29¾	500
North Pennsylvania RR.	—	—	52¼	6
Pennsylvania RR.	51⅞	50	*50½	55050
Reading RR.	55	54¼	55	5591
Delaware Division Canal	—	—	—	—
Lehigh Coal and Nav. Canal.	51¼	50⅝	51⅛	7719
Morris Canal	—	—	50¼	—
" Preferred	—	—	127	—
Pennsylvania Canal	—	—	—	—
Schuylkill Navigation Canal	—	—	7¼	—
" " Preferred	—	—	14¾	—
Susquehanna Canal	—	—	—	—
Buck Mountain Coal Co.	—	—	—	—
Fulton Coal Co.	—	—	—	—
Locust Mountain Coal Co.		—	—	—
Westmoreland Coal Co	—	—	85	—
Cambria Iron Co	—	—	—	—
Crane Iron Co	—	—	—	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co.	—	—	72	—

Total shares sold 70,387
Sales for the week previous 89,973
Decrease 19,586

* Ex-dividend.

Closing quotations, in the absence of sales, represent the latest prices bid.

Sales of the various bonds for the period under review have been as follows:

	Sales.	Price
Catawissa RR., 1st m'tge. conv. '82	$—	—@—
" " chat. " '88	—	—@—
" " new 7s. 1900	—	—@107¾
H and B. T. RR. 1st mortgage, 7s	—	—@106
" " " 2d " "	—	—@101
" " " 3d " cons	—	—@ 56
Lehigh Valley RR. 6s, '98	1,000	—@104
" " " 7s, 1910	1,000	—@110¾
" " " con. mtge. 6s reg.	10,000	—@ 99½
North Penns. RR. gen. mtge. 7s,	8,500	103 @104
" " " 1st mtge. 6s, '85	500	—@102
Pennsylvania RR., 1st mtge. 6s, '85	2,000	—@103¾
" " " gen. " reg. 1910	10,000	103¾@103¾
" " " 7s coup	—	—@100
Phil. & Reading RR. 6s, 43 & 44 '80	9,000	101⅛@102
" " " 7s, '91	—	—@108
" " " deb. bonds	3,000	80 @ 80¼
" " " G. M. 7s, con. 1911	2,000	106¾@107
" " " " reg. 1911	—	—@106¾
" " " 6s g. 1911	—	—@106¾
" " new convertible 7s, '93	32,000	106 @106⅛
Phil. & Reading C. & I. Co. 7s deb. '92	4,000	—@ 82¼
" " " " 7s '92-3	—	—@—
Lehigh Coal & Nav. Canal, 6s '84	28,500	101 @101⅛
" " " RR., '97	500	—@101⅛
" " " '77	—	—@*97
" " " conv. '82	—	—@102
" " " g. '94	—	—@106
" " " gold, '97	9,500	101⅛@101¼
Morris Canal, 1st mtge. 6s, '76	—	—@100
" " 2d " '76	—	—@100
" " boat, '85	—	—@ 97½
Penn. and N. Y. Canal, 7s	11,000	—@106
Schuyl. Nav. Canal, mtge. 6s, '95	5,000	—@ 79
" " " 2d " 1907	—	—@ 81
" " " 1st mtge. 6s c.	—	—@ 97
" " " 6s Imp. '80	—	—@ 94
" " " 6s boat and car, 1913,	3,500	—@ 78
" " " 6s " " 1872,	2,000	—@101¾
" " " '82	3,100	—@ 81¼
Susquehanna Canal, 6s '94	1,000	—@ 78
" " Pf'd. 6s	500	—@ 85
Del. Division Canal 6s	8,000	—@ 97

Total amount of sales $145,600
* Asked.

Gold and Silver Stocks

SAN FRANCISCO, Aug. 4th, 1875.

THE San Francisco Stock Market still continues to advance the whole list, with the exception of Overman and Eureka Consolidated, being fully on an average of 10 per cent. in advance of quotations reported a week ago. The Caledonia Mining Company have levied an assessment of $3 per share, delinquent August 11th. This Company proposes to increase its capital stock from 20,000 shares to 100,000 shares. A meeting of the stockholders, for this purpose, will be held August 18th. The stock of the Savage Mining Company exhibits a marked improvement compared with our quotations of the 28th instant; this stock was quoted on the 1st of July at $85 per share. Our report to-day places it at $144 per share, an advance of $59 within the month. From the annual report of the company for the year ending June 30th, it appears that the total receipts for the year amounted to $540,638, of which amount $413,225, or nearly 75 per cent., was derived from assessments. The sum of $421,506 was expended directly toward the development of the mine, divided as follows: for labor, $252,834, and for machinery and mining supplies, $168,672. The mine is now being worked to the depth of 2,100 feet, and operations for going still deeper are being vigorously prosecuted. The reports of the present appearance of the mine are of the most flattering character. The last dividend of this company was in 1869, and assessments amounting to over $1 000,000 have been levied since then. A special meeting of the Savage Mining Company will be convened Aug. 17th, to consider the propriety of increasing the capital stock from 16,000 shares to 112,000 shares, equal to $11,200,000 at the par value of $100.

The Commercial Bank, with a capital of $5,000,000, has commenced business in San Francisco.

The Imperial silver mine, which for three years has produced barren ore, has recently cut ore, at a depth of over two thousand feet, which assays $101 per ton. The mine is on the Comstock Lode. The stock of the Bullion Mine, which has been assessed $2,000,000 and has never paid a dollar, is now selling at $50 a share, which is equivalent to $5,000,000 for the mine.

The Colorado Mines are being very energetically worked at this time, owing to the approaching end of the season, when operations on all mines on the snowy range must be stopped. The June shipments of ore and bullion from Georgetown, Colorado, amounted to $150 000. New reduction works are being erected by New York capitalists to supply increased facilities for the treatment of ores.

Quotations Aug. 4, 1875.

Sierra Nevada	19	Imperial	12
Union Consolidated	10	Yellow Jacket	90
Mexican	25	Kentuck	17
Ophir	63	Crown Point	37
California	74	Belcher	32
Virginia	359	Overman	57
Best & Belcher	67	Caledonia	27
Gould & Curry	25	Raymond & Ely	50
Savage	144	Meadow Valley	7
Hale and Norcross	60	Eureka Consolidated	46
Chollar Potosi	94	Eureka G. V.	5
Alpha	23	Silver Hill	—

Copper Stocks.

BOSTON, Aug. 5, 1875.

The stock market for the week ending to-night has been characterized by intense dullness. Allouez has made a slight improvement standing $14 bid to-day, with a sale at 14½, against 13⅜ a week ago. Calumet & Hecla is steady and firm at 153 bid with sales. Quincy has been devoid of interest this week, closing 39½ to 40½, with some private sales being quoted at $40. Am Cable Screw Wire Co., has receded from $5 00 bid to 4⅞ sales, some 1000 shares changing hands. We quote Copper 22⅛ to 23 and very quiet.

	Closing Bid.	Closing Ask'd.
Allouez	14	15
Calumet & Hecla	153	153½
Copper Falls	—	10
Dana	20	25
Duncan Silver	20	25
Franklin	13	13 50
Mesward	50	1 00
Minnesota	2	2 50
National	3	3¾
Petherick	7	8 75
Pewabic	5	5 50
Quincy	39½	40
Ridge	6½	6¾
Rockland	50	75
Superior	15	25

Gas Stocks.

NEW YORK, Aug. 6, 1875.

We note a recent sale of 75 shares of the San Francisco Gas Light Co's stock, at 97 ex-dividend.

At auction on the 4th inst., 160 shares of the Manhattan Gas Light Co. sold at $296 to 298 per share.

The Cambridge, Mass., Gas Light Company has declared a semi-annual dividend of $5 per share, aggregating $35,000, payable August 2nd.

The Lawrence (Mass.) Gas Light Co. has declared a semi-annual dividend of $5 per share, aggregating $20,000, payable Aug. 2d.

A semi-annual dividend of $5 per share, aggregating $22,000, has been declared by the South Boston Gas Light Co., payable Aug. 2d.

The Malden and Melrose (Mass.) Gas Light Co. announces a semi-annual dividend of $3 per share, aggregating $5100, payable on the 2d of August.

The coupons of the Sioux City Iowa Gas Light Co., now due, will be paid at New York.

The coupons of the People's Gas Light Co., of Albany, N. Y., are now due, and will be paid in New York.

The Washington Gas Light Co., of Philadelphia, has its semi-annual dividend period in August.

Manhattan Gas Light Co.	New York, par	$295
Metropolitan "	" " 100	157
New York "	" " 100	155
Mutual "	" " 100	103
Harlem "	" " 50	130
Baltimore "	Baltimore, Md. 100	190
People's "	"	25¾
Boston, Mass. "		770
Chelsea, "		130
Cambridge, "		132¾
Portland, Me. "		72
Hartford, Conn "		40
San Francisco, Cal. "		*97
Williamsburgh "	par 50	142
Northern Liberties Gas Light Co.	Philadelphia	29½
Brooklyn "	" par 25	242
Citizens' Gas Co.,	Brooklyn " 20	150
Nassau "	" " 25	121¼
People's "	" " 10	95
Metropolitan "	" " 100	100
Westchester Co. Gas Co.,	N. Y. " 100	100
Louisville, Ky		127
Cincinnati, Ohio, Gas Light and Coke Co.		208
Halifax, N. S., Gas Light Co.	par 40	142
Buffalo Mutual, Buffalo, N. Y.	" 100	50
Hannibal G. L. Co., Mo	" 100	90
Chicago, Ill., G. L. and Coke Co.		145
Toronto, Ont., G. L. and Coke Co.	" 50	130
Jersey City		†160
People's of Jersey City		‡ 65
Derby, of Conn	" 100	‡ 80
Woonsocket, R. I.	" 100	†100
Fort Wayne, Ind.	" 100	‡105
Lewiston, Me.	" 100	‡ 80

* Ex Dividend. † Nominal. ‡ Asked.

American Institute of Mining Engineers.

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Announcements to Members and Associates.

I. THE ENGINEERING AND MINING JOURNAL, containing the official reports of proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. Blank proposals for membership can be had on application to the Secretary.

IV. The second volume of Transactions has been mailed to all home members and associates not in arrears. Any member who failed to receive his copy will please notify the Secretary promptly. The Institute is not responsible for the loss of the volume in those cases where members have changed their residences and have omitted to inform the Secretary. Volumes I. and II. will be sent, post-paid, to non-members, at five dollars each.

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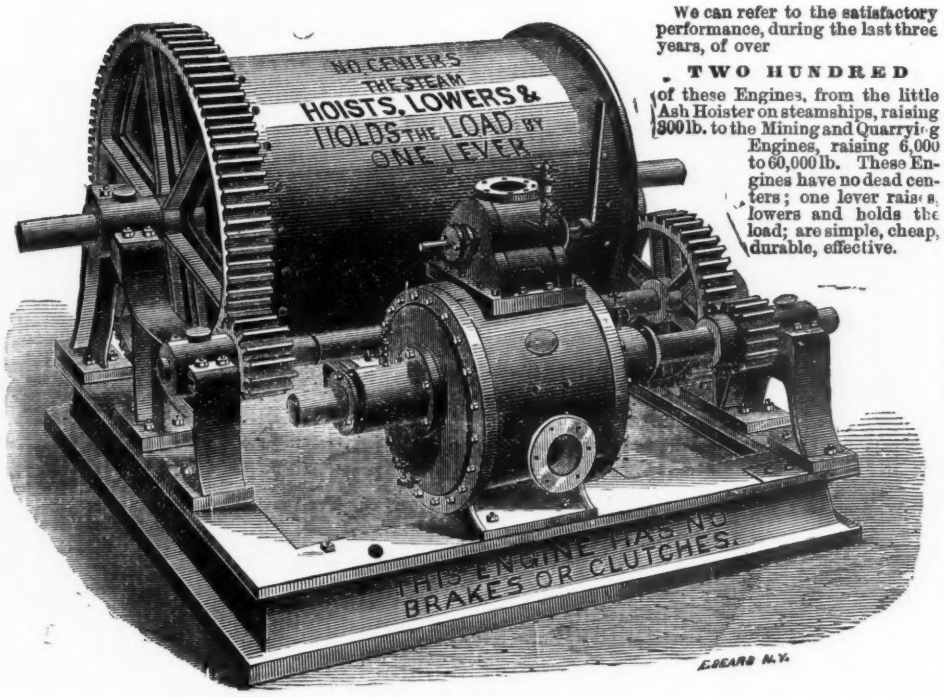

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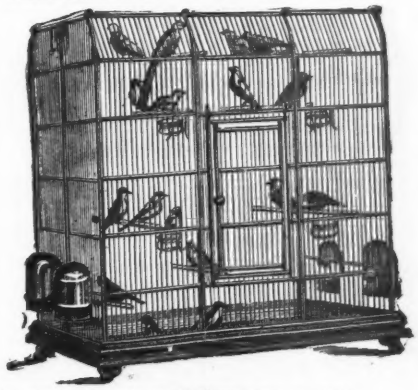

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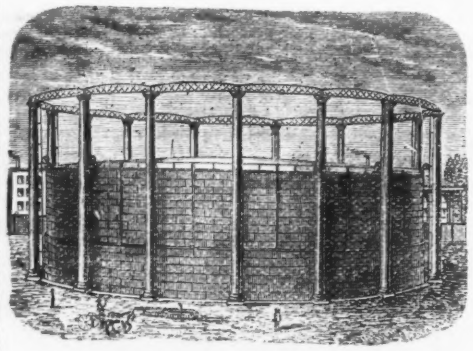

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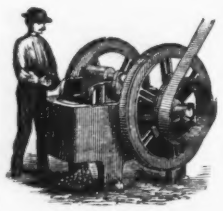

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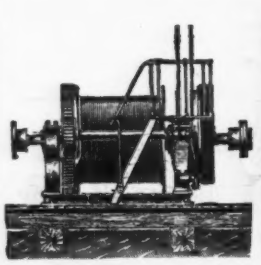

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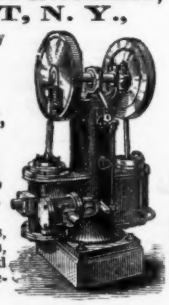

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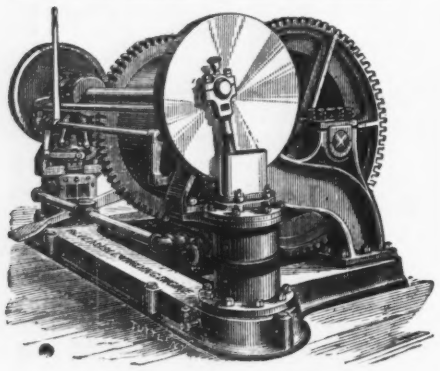

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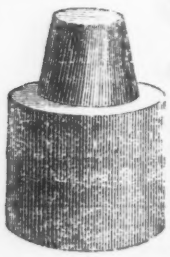

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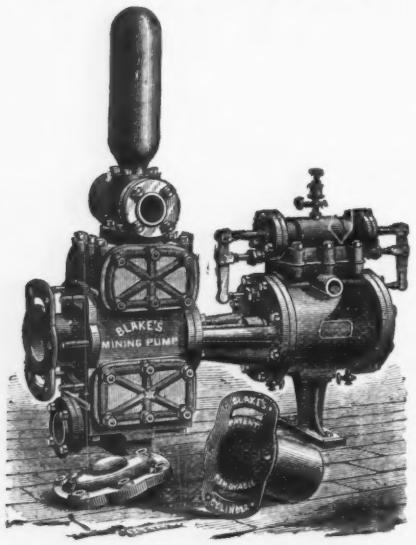

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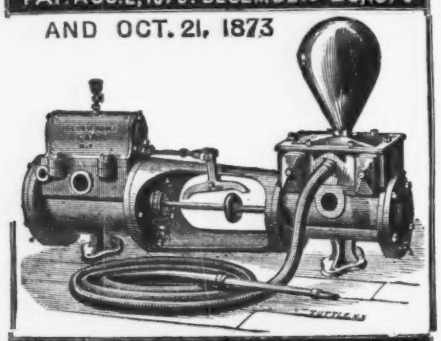

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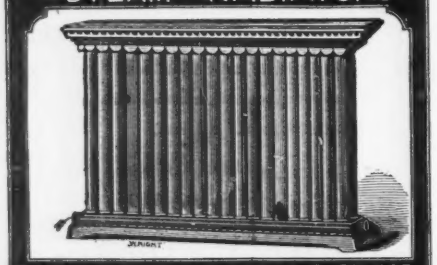

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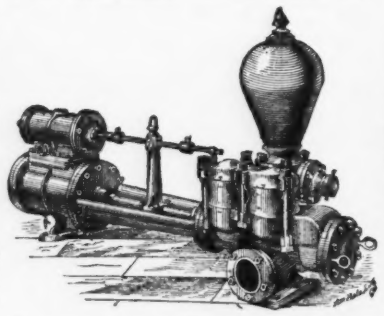

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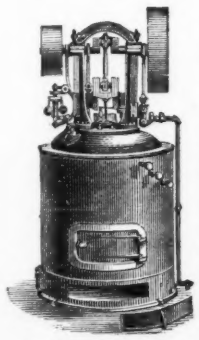

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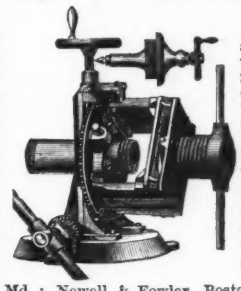

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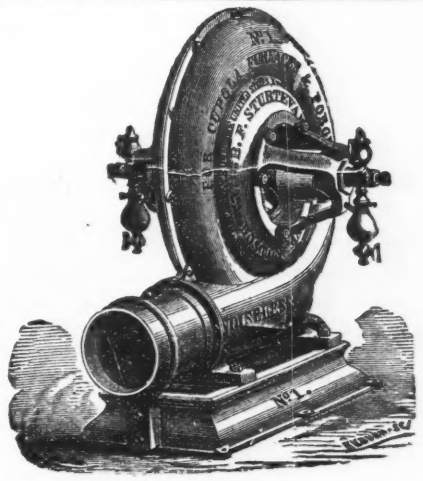

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Without decreasing size of any part of our "Engineers' Transit" we have reduced the weight one-half. An ordinary Transit Telescope magnifies from 10 to 12 diameters, our new Transit Telescope (length 10½ inches, shows objects erect and not inverted) magnifies 28 diameters and will read time on a watch-dial at 983 feet. For description of our new Mining Transit (weight 5½ lbs.) and Plummet Lamp, see Van Nostrand's Engineering Magazine, June, 1873.

Extract from report of Committee of Civ. Engs. appointed by Franklin Inst. to examine H. & B.'s new Transit (Dec. 1871): "It exhibits several novelties of construction which, in the opinion of the committee, render it superior to those now in use, and in its opinion the deviations which they have made from the common styles of Transit are decided improvements."
JOHN C. TRAUT, Chairman.

Descriptive and Illustrated Price List sent Post-paid, on Application.

THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E.
ROSSITER W RAYMOND, Ph. D. } Editors.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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Comstock's Fate.

A SAD story is revived in the following letter of a veteran miner and prospector to the Pioche, Nev., *Record*. We know Mr. BATESON personally, and have no doubt of the accuracy of his version.

PIOCHE, July 17, 1875.

Editor Record: The communications in reference to the probable fate of HENRY COMSTOCK, of Washoe fame, are surprising in view of the uncertainty expressed concerning the death of one, whose name will grace the lists of immortality when those of statesmen now famous will slumber in oblivion.

To be brief in my statement. During the Summer of 1870, an expedition, consisting of about one hundred and fifty men, started from Denver, the object being the exploration of the Black Hills. With that expedition went HENRY COMSTOCK, then fresh from a prospecting tour in New Mexico.

The expedition proved barren of results, and the party disbanded in Montana. A majority of those composing it returned to Colorado and their haunts along the line of the U. P. RR. Others scattered through Montana, COMSTOCK remaining in Bozeman. The great prospector here gave evidence of the hypochondria ascribed to him by familiar acquaintances years before ; a condition created by brooding over lost opportunities and contrasting them with present destitution.

During his aberrations he informed a young man named HOLDEN that he meditated suicide, and a few hours after a pistol-shot was heard in his cabin and HENRY COMSTOCK, still clinching the instrument of his destruction, squalid, wretched, unmourned, unnoticed and almost unknown, had terminated his extraordinary but ill-starred career. JOHN A. BATESON.

The contrast between the miserable end of COMSTOCK, and the splendid history of the industry gathered around the lode which bears his name, is provocative of reflection. It is a fact that most of the Western prospectors spend their time and waste their health in chasing one phantom after another, or in grasping substantial fortune only to let it go again, and die at last in poverty. Their restless, reckless lives, half deprivation, half dissipation, full of tremendous energy, endurance of hardship, heroisms of friendship, perils of treachery—savage and civilized—could scarcely reach, according to the laws of physical and social nature, a different end. *

Pretty Hot Mining.

EVERYONE knows that, as a rule, the temperature increases 1° Fah. for, say, every 60 feet in depth which we penetrate ; but as every working place in a mine must be ventilated to some degree, the air currents carry off the heat, and it is exceedingly rare that a temperature of 100 degrees is found. In one of the London papers we find it stated that in driving the connecting level between the Gould & Curry and Best & Belcher mines, on the Comstock lode, "the work has progressed very slowly, as the heat was so intense *that it required three or four men to swing a pick*, and even then they became exhausted in a few minutes. The thermometer stood 115°".

We have seen it pretty hot underground, but we can't say we ever got into a place where it took "three or four men to swing a pick," and if this be so at a depth of 1,700 feet, what number will it take "to swing a pick" at 4,000 feet, to which depth some of the Comstock mines are now sinking. For if we assume the heat of the rocks to be 65° at 100 feet from the surface, and only 115° at 1700 feet—and the rocks should be hotter than the air—then the rate of 1° for 32 feet, which results from these figures, would give a temperature of 221° at 4,000 feet. But perhaps the mathematicians who "estimate" so elaborately the profits that some of those silver mines *are going to make* can figure up how many men it will take "to swing a pick" at a temperature a little above the boiling point of water.

Mr. Gowen's Argument.

THE address of FRANKLIN B. GOWEN, Esq., the President of the Reading Railroad Company and the Coal and Iron Company connected with it, before a Committee of the Pennsylvania Legislature, charged with the investigation of the affairs of those corporations, is published this week in full in our columns. It will repay in many respects a careful perusal. As a piece of closely-knit logical argument, it has seldom been surpassed. It has the strength which comes from masterly clearness in the arrangement and presentation of facts. What used to be said of the forensic efforts of DANIEL WEBSTER, that he won his cases by simply stating them, would be applicable to this address. The story of the plans and performances of the companies which Mr. GOWEN represents is told with a force and a skill that make it both intelligible and fascinating, even to the non-professional or uninformed reader. Besides this, the address is a model of rhetorical form, abounding in polished satire of a high order, and rising occasionally to unaffected (but not ineffective) eloquence.

So far as the charges against Mr. GOWEN's companies are concerned, it is evident that he disposes of them thoroughly. In fact, the investigation itself had left little of the original complaints, having been transformed, in the most ludicrous manner, into a very damaging exposure of the accusing parties. Mr. GOWEN is not slow to perceive and to make terrible use, with merciless good-nature, of the awkward plight into which his adversaries have fallen. He not only has carried the war into Africa, but he blows his victorious trumpet all over the conquered Carthaginian territory. More serious still is the assault he makes upon the ringleaders in the labor troubles, and the local officials whom they virtually appoint and control. His words of hearty indignation on the political and industrial tyranny which has flourished in the anthracite region are well-deserved and well-aimed, and will wake, we trust, some echoes that will not be allowed to die away unheard.

The sum of the whole matter thus far appears to be this. The Reading Railroad and its related Coal and Iron Company possess certain enormous privileges, which the present constitution of Pennsylvania forbids the Legislature to grant. By granting such privileges formerly, and then suddenly shutting the door upon them, the people of Pennsylvania have really conferred upon a few companies monopolies of the most dangerous and odious kind. This was done by demagogues under the cry of anti-monopoly ! It is of a piece with the late notorious Congressional "salary-grab," when Congress, at one session, raised the salaries of its members, somewhat ante-dating the increase, and at the next session reduced the salaries again, thus making a real "grab" out of what might have been a defensible and legitimate increase of wages. In like manner, certain transportation companies received certain grants of powers from the Legislature of Pennsylvania, which might in themselves be either beneficial or perilous to the public interest. If they carried the seed of monopoly in them, the obvious remedy was a general law, throwing open similar grants, under proper safeguards, to all parties. To stop short after permitting three or four great consolidations, and say virtuously, "Now we'll have *no more* seeds of monopoly," was to force into full-blosomed monopoly the seeds already planted.

Well, Mr. GOWEN being at the head of a great monopoly, must expect to be periodically investigated. That is really the only safeguard left to the people—and a rather shaky one it is, if the nature of ordinary legislative investigations be considered. He has taken his overhauling like a man, and the committee, on the evidence before them, can certainly bring in no other verdict than this : that Mr. GOWEN, whatever may be the harmful possibilities of the power which he wields, has administered it thus far in such a way as to benefit the industry of the coal-regions, favor the manufacturing interests of Pennsylvania, and deliver the private consumers of coal from the extortions of middlemen. Like the Great Emperor, he may meditate absolute despotism; but meanwhile he delivers the land from robber barons whose castles (now called coal-yards) nestle along the ways of commercial transportation.

Mr. GOWEN might have said more than he does, in favor of the policy of large ownerships in the coal regions. The greatest economical evil incident to the small proprietorship, and especially to the operations under lease, is the enormous waste of coal by the employment of reckless methods of extraction and by the robbing of the most easily worked, or immediately profitable, seams, to the ruin of overlying ones. When the American Institute of Mining Engineers, many of the members of which are practically experienced as coal operators, began, some years ago, to discuss this important question of the enormous waste of anthracite coal, one of the first things made plain by the debates in that body was the fact that the chief hope of putting a stop to the destruction of 60 per cent. of the country's wealth for utilizing the other 40 per cent., lay in the consolidation of the titles to coal lands in the hands of large and wealthy operators, whose interest would be in true and permanent economy, and whose intelligence could lead them to examine with candor all propositions looking in that direction. In the acquisition of 90,000 acres of anthracite lands, in the sinking of the great shafts near Pottsville, and in the general system which it is extending and perfecting throughout its wide domain, the Reading Company is already giving promise of making good these anticipations of benefit.

Such enormous concentrations of wealth and power are indeed to be regarded in any country, and particularly under political institutions like ours, with much apprehension. They certainly are extremely liable to abuse ; and we look in vain for an adequate check to their possible encroachments upon the freedom of trade and the administration of justice. But it is a good old English habit, which we would do well, perhaps, to imitate, not to worry greatly over abuses until they actually take place. In this instance, it is clear enough that nothing of the sort has taken place under the management of Mr. GOWEN. The record of his two companies is a splendid one in every particular.

But if actual, not hypothetical and anticipated, abuses require immediate reform, certainly there is sharp work for the Legislature of Pennsylvania in the condition of things which Mr GOWEN sets forth so clearly in the strong paragraphs of his address, driven home and clenched by the catalogue of outrages at its close. Will the committee do its duty to the Legislature, and will the Legislature do its duty to the public in *this* matter? Exposing tyrannous monopolies is a good thing. Now let us have light thrown on the monopoly of

labor which it was attempted to found on a policy which bore so largely murder and arson, as its fruit.

Whatever may be the future course of events, the immediate antagonists of Mr. GOWEN must be ready to adopt the outcry of SIR ANDREW AGUECHEEK: "An I had known he was so cunning of fence, I had seen him damned ere I had challenged him!"

NEW PUBLICATIONS.

A PRACTICAL TREATISE ON COAL MINING. By GEORGE G. ANDRÉ, F. G. S., Mining, Civil Engineer, etc. E. & F. N. SPON, London, and 446 Broome street, New York. Price, each part, $2 50; to be completed in 12 monthly parts.

THOUGH England mines as much coal as all the rest of the world, its literature on the important subject of coal mining has always been lamentably deficient. For many years, English mining engineers were nearly all so-called "practical men," which meant that they had no scientific attainments, and their work was generally looked upon by educated foreign engineers as "wasteful" and expensive. It is true, we had even then some valuable little books on mining, such, for example, as JOHN HEADLEY'S treatise on coal mining; and an immense amount of valuable information was published in the parliamentary blue books, reports of committees appointed to examine into the causes of accidents in coal mines, reports of inspectors of mines, etc., but there has never been published, in the English language, any treatise on mining that could at all compare with those of COMBES, BURAT, or PONSON in French; LOTTNER and SERLOW, and others, in German.

It is true, W. W. SMYTHE'S little book on coal and coal mining is an interesting elementary work; but it is no treatise on the subject. And as for the enormous volume, "*Greenwell's Practical Treatise on Mine Engineering*," it contains less information than could very easily be put in a pamphlet, and is unworthy of its high-sounding title.

We can, therefore, welcome a new book on this important subject, and especially, as it promises to be really a valuable work. We refer to "*A Practical Treatise on Coal Mining*," by GEORGE G. ANDRÉ.

This book is being brought out in twelve monthly parts, four of which have already appeared, and treat of the following subjects:

I. Practical Geology.	III. Searching for Coal.
II. Coal: Its Mode of Occurrence.	IV. Shaft Sinking.

The succeeding numbers will treat of:

V. Driving of holes, or narrow work.	XI. Ventilation.
VI. Systems of working.	XII. Incidental Operations.
VII. Getting the Coal.	XIII. Surface work.
VIII. Haulage.	XIV. Management and Accounts.
IX. Winding.	XV. Characteristics of the coal fields of Great Britain and America.
X. Drainage.	

The work is very handsomely printed in royal 4to. Each part contains 48 pages, and 6 fine plates.

The book seems to be based largely on French works of the same class, and in the four parts already out, is certainly the most complete work of the kind in English, and generally well up with the present state of mining knowledge. We note, however, some exceptions; as, for example, where Mr. ANDRÉ tells us gravely, that "the seams of anthracite are the lowest in geological order, and they owe their distinctive character to their position." And again, "Semi-bituminous coal occurs next above anthracite in geological order." "Bituminous seams occupy a higher position in the series," and "gaseous coals occupy the highest geological position, some of them occurring in formations more recent than those of the Carbon Period." Now, these conclusions are wholly unwarranted. We have the same bed of coal in one portion of Pennsylvania a hard anthracite, in another, a soft, "free-burning anthracite," then a semi-bituminous, and, finally, a true bituminous coal. There can be no question as to the fact that these several varieties of coal are of the same geological age, and, in fact, it is by no means true that in the same field the lowest bed is always the hardest anthracite. The hardness of the coal appears to be due to a greater or less intensity of metamorphic action, and these forces show themselves in the more or less contorted and disturbed condition of the strata. The hardest anthracites are found in the regions where the rocks have been most disturbed, and the free-burning coals of the same age lie in regular horizontal, or nearly horizontal, beds.

In the chapter on boring and searching for coal there will be found many useful suggestions; and, indeed, the book is one which every mining engineer should have. We shall review each part as it comes out, and thus give our readers some idea of the scope and value of the work, though we have no doubt all who are interested in the subject will procure the work itself.

The publishers' address is given above.

DETERMINATION OF MINERALS BY THE BLOW-PIPE. By Dr. C. W. C. FUCHS. Translated by T. W. DANBY. For sale by D. VAN NOSTRAND, New York. Price, $2.50.

This is a very convenient little treatise on the determination of minerals, and is especially well arranged, being interleaved with blank paper, on which notes of determinations, etc., can be conveniently recorded.

EUROPEAN LIGHT-HOUSE SYSTEMS. *Report made to the United States Government by Major* GEO. H. ELLIOT, *U. S. A.* Published by D. VAN NOSTRAND, New York. Price, $5.

This valuable book is illustrated by fifty-one engravings and thirty-one wood-cuts, and is one of the most complete treatises on an important subjec that has been prepared by the Government. A marginal index adds to its convenience for reference.

In summarizing his preliminary report, which forms a preface to the complete work, the author says: "While the British and French systems are necessarily very much like our own, I saw many details of construction and administration which we can adopt to advantage, while there are many in which we excel. Our shore fog-signals, particularly, are vastly superior both in number and power. They are in advance of us in using both the gas and electric lights in positions of special importance; in the use of horizontal condensing prisms for certain localities; in the character of their lamps; in the use of fog-signals in light-ships; in their light-ships with revolving lights, and, more than all, in the character of their keepers, who are in service, during good behaviour, until death or superannuation, who are promoted for merit, and whose lives are insured by the Government for the benefit of their families."

NOTES ON BUILDING CONSTRUCTION, *arranged to meet the Requirements of the Syllabus of the Science and Art Department of the Committee of Council on Education, South Kensington.* Part I., Elementary Course. For sale by J. B. LIPPINCOTT & Co., Philadelphia.

This is a most useful elementary book, and will commend itself as a text-book for our engineering schools, architects, builders, and engineers. The following chapter-headings will give some idea of the scope of the work:

Walling and Arches.	Floors.	Slating.
Brickwork.	Partitions.	Plumbers' Work.
Masonry.	Timber Roofs.	Cast Iron Girders, etc.
Carpentry.	Iron Roofs.	Joinery.

The Parts II. and III. will contain more advanced instruction on the same subjects, and "on the nature of the stresses to which the different parts of simple structures are subjected; the nature, application, etc., of materials used in buildings, and notes on foundations, scaffolding, travellers, etc.

CORRESPONDENCE.

The Cost of removing Cinder from Furnaces.—"M. P. J.," of Pottstown, asks, "What is the average cost of removing cinder from the furnaces in the Schuylkill and Lehigh regions?"

Will some of our furnace-men answer the question through our columns?

"MINER," *of Pomeroy, Meigs County, Ohio,* asks, "Would you please inform me, through the columns of the ENGINEERING AND MINING JOURNAL, how many *cubic inches*, in the *solid* or *hill*, make a *bushel* of *coal?* By *car measure* we have 2,688 cubic inches in the bushel.

"We have quite a difference of opinion as to how many bushels of coal there are in one acre in the solid; thickness of vein five feet.

"Please inform if there is a standard law for the United States."

Our correspondent does not mention the weight of the "bushel" of coal to which he refers. In many places it is 80 lb., though at Pittsburgh it is but 76 lb. We will assume it to be 80 lb., and assuming the coal has a specific gravity of 1·27—of course, for any given coal the specific gravity should be determined—then the cubic foot "in the solid" will weigh 79·37 lb. (water weighing 62·5), and each square foot of area of a five-foot vein would contain 396·87 lb., and each acre 396·87×43,560=17,287,657 lb., or 8,644 tons of 2,000 lb.

This, of course, is not the amount of coal that an acre of a five-foot vein would yield, for we would have to deduct from it from 15 to 50 per cent. for pillars and waste, according to the system of mining employed, the hardness of the coal, etc., and it is understood, also, that the five feet are all clean coal, free from slate or shale.

According to the above calculation, a bushel of coal=80 lb., in the solid measures 1·01 cubic foot, while our correspondent informs us that when broken "in the car" it measures 1·56 cubic foot. The space occupied by the broken coal will depend on the size to which it is broken; the smaller the pieces the greater the space occupied by a given weight. In railroad work it is usually estimated that one cubic yard of rock in the solid will make from 1¾ to 1¾ cubic yards of embankment. In coal, however, the fine may fill the spaces between the large lumps, and this difference is lessened.

There can necessarily be no standard relation between the thickness of the coal and the tons per acre, since it will depend on the specific gravity of the coal. A very common rough estimate that is often used is 1,000 tons to the acre to the foot thickness of vein. This is, as we have seen, usually very far from the truth, but it is intended rather to represent the amount of coal that "can be got" from an acre for each foot thickness of vein.

The Negaunee Hematite Range, Michigan.

BY JULIUS ORTHEY.

THE hard ore range of Lake Superior is well-known to every one interested in the iron business, but the hematite range is comparatively new, the explorations very limited and, therefore, not so thoroughly known except to those immediately interested, and in some cases not even to them.

By a great many it is looked upon with contempt because the ore is hematite, which at best never yields over 45 per cent. of metallic iron; but it is my opinion, and that of others, that it will become of great importance on the revival of the iron trade.

The first openings on this range have been made by the Jackson Iron Company and the McCombre Mining Company, on a tract of land immediately south of the village of Negaunee. The ore mined here is a blue, soft hematite containing about 42 per cent. of iron, relatively pure, with a good deal of magnesia. These

openings have been worked to a great extent and large quantities of ore have been shipped, but since 1873 little or nothing has been done there.

The success of these mines induced Hon. E. BREITUNG, of Negaunee, to lease a large tract of land from C. P. HARVEY, which Mr. BREITUNG re-leased, in parcels of from 40 to 120 acres, to a great many parties, and a great many small mines have been opened on these lots and some of them have been worked to a considerable extent. The most important of these is the "Rolling Mill Mine," where work is carried on on two distinct beds of hematite ore. The upper or western bed, of about 50 feet in width, is a blue hematite yielding about 40 per cent. of metallic iron; the lower or eastern openings are in a crystallized hard (very siliceous-loking) hematite containing a great deal of manganese (15 per cent., I believe,) which undoubtedly is the reason that this ore is constantly in demand, as the company keeps from 25 to 50 men at work in the deposits Summer and Winter—even now, while all the other works on the soft hematite have lain idle since the Fall of 1873.

This ore does not seem to be found in regular veins but only in deposits and nests of small extent, as it could not be found on the adjoining (the Himrod Iron Co.'s) location. This company (Himrod Iron Co.) have made extensive openings in a bed of dark-blue, soft hematite (the same as the western bed of the Rolling Mill Mine) and have taken out, and deposited in stockpile at the mine, a large amount of the ore, but only a very little of it (2,000 tons, I believe,) has been shipped, as it is said the ore contains too much rock, thus yielding too little iron in the furnace. If such be the case, the ore would be almost valueless except for smelting on the premises, which is, I am told, forbidden. On a thorough examination of the stockpile, the rock (if there is any) could not be distinguished, as it looks like the ore and has nearly the same specific gravity, therefore a better separation would be very difficult, if not impossible. The ore bed itself is disturbed by narrow ledges of cloritic or talcose slate, from one and a half to three feet wide, causing the miner a great deal of trouble; but these fissures are so well defined that they can be easily taken down by themselves and separated from the ore if ordinary care is taken, which it seems has not been done on the Himrod location. Adjoining this is the Spurr and Calhoun lot, where an opening has been made on a conglomeration of hematites. Good ore exists here only in small deposits.

About one half mile east of this range is another range of bluffs, on which a number of mines have been opened, some of which have been worked to a considerable extent. The most important on this range is the Greenbay Mine, from which several hundred thousand tons have been shipped.

The formation in which these ores are found is the Greeenstone formation, and volcanic eruptions have caused upheavals of this material, forming high bluffs, towering far above the neighboring country. These bluffs are almost a sure sign of the existence of a hematite ore-bed in close proximity.

East of those Greenstone bluffs, on the range where the Rolling Mill Mine is located, the country is almost wholly made up of iron ore of more or less value, as may be seen on the Himrod Iron Company's location, where the explorations have been more extensive than on any other lot on this range. A cut at the base of the hill opened a bed of hard, fine grained ore, which, it is said, contains 40 per cent. of metallic iron, about 10 per cent. silica, and 17 per cent. of manganese. This would certainly make this ore very valuable, the more so as the ore-bed is very regular and very broad, as shown in the explorations of the H. I. Co., and Spurr & Calhoun Co.'s locations, a distance of ¾ mile; but there is one feature in the construction of this ore-bed which prevents its being utilized. The ore is stratified, and between the layers of ore are layers of other matter, principally jasper.

The ore is so closely bound to the rock that a thorough separation is not only very difficult but impossible, therefore ore and rock will have to go to the furnace together.

Can it be smelted? I believe so. I have seen ores of a similar composition go through a furnace which produced the very best kind of spiegeleisen. Attempts have been made by the former owner of this lot to have a trial made of this ore, but the lack of funds on his part prevented its being done. In the flat near the base of the bluff, a shaft has been sunk into a bed of very good-looking, hard hematite of a coarse grain, and of a compact nature, promising well for the future of that range.

All the mines on the ranges are connected either with the Chicago and Northwestern Railway or with the Marquette, Houghton and Ontonagon Railroad by branch roads, the beds for which have been built by the mine owners, while the railroad companies furnished ties and rails, as also the laying of same. At present all the operations are suspended, except the Rolling Mill Mine, which employs a small force, but on the revival of the iron trade, this "Negaunee Hematite Range" must become of great importance on account of its manganese-bearing ores.

Notes.

Pennsylvania Nickel Ore.—A quantity of nickel ore has been shipped from Burket nickel-field, Somerset County, to the Dunbar furnaces, for a practical test.

The Catasauqua Pa., Manufacturing Company are now making plate steel. The Lehigh Shovel Company of that place use this steel, and pronounce it first-class.

The Hazard Manufacturing Company of Wilkes-Barre has just filled an order for two wire ropes, one 2,000 and the other 1,800 feet long. They were shipped to Virginia City, Nevada, this week, and are to be used for hoisting ore from a silver mine. Wilkes-Barre *Record*.

Running Coal on the Ohio.—The late run of coal being a large one has caused a good deal of discussion in regard to when the largest run was made. Below will be found all the runs that exceed six million of bushels for the past seven years. The runs previous to the last one were made during the months designated. The late run was made in about two days and is undoubtedly the largest one that was ever handled in the space of about forty-eight hours, and had the coal men not been interrupted by the Smithfield street bridge it would have been handled in far less time:

1869.		1872.		August	5,447,000
March	6,670,000	January	8,021,000	1874.	
June	6,224,000	April	17,468,000	January	8,748,000
December	12,309,000	June	8,223,000	February	8,578,000
1870.		July	9,520,000	March	8,355,000
March	7,834,000	October	9,752,000	April	9,143,000
May	6,527,000	1873.		November	7,848,000
1871.		January	7,965,000	December	10,849,000
February	6,857,000	February	7,995,000	1875.	
March	11,424,000	March	8,783,000	March	11,280,000
May	8,267,000	April	8,036,000	April	7,710,000
November	6,002,000	July	6,420,000	July	11,080,000

—Pittsburgh *Commercial*.

The Kittanning Coal Company.

THIS company, which has a capital stock of $500,000, in shares of $50 par value, owns the coal underlying 8,000 acres of land belonging to the Moshannon Land and Lumber Company, in Clearfield and Centre Counties, Pa.; also, 1,600 acres in fee simple in Blair and Cambria Counties, and the coal rights on about 900 acres in Clearfield County. The present capacity of the mines and mine plant is 1500 tons a day, and a comparatively small additional outlay would put the property in a position to double that large production.

The coal is transported over the Blair Branch of the Tyrone and Clearfield Railroad and the Pennsylvania Railroad to Amboy, N.J., Greenwich, Philadelphia; and to Canton, Baltimore; from which ports it is distributed to the various Eastern and foreign markets.

The excellent quality of the Kittanning coal is well established. The following proximate analysis by Prof. CHAS. H. SEELY, of New York, gives its composition:

Volatile combustible matter	20·10
Fixed carbon	76·39
Ash	3·51
Coke	79·09
Sulphur	0·19

"The small percentage of sulphur and of ash as well as practical tests of the coal, by coking and burning in various ways, indicate that for metallurgical purposes and for raising steam it is of the first quality."

The Company's Clearfield lands all contain, above water level, the principal veins of that region, while the Blair and Cambria properties are underlaid by the celebrated Lemon and Miller veins, the coal from which is highly esteemed for brick burning. As the company owns 231 railroad coal-cars, it is, in a measure, independent of the railroad companies in furnishing its customers, and in addition it is well known that coal-cars are a very profitable investment for a coal mining company.

The Kittanning Coal Company appears, therefore, to possess all the essentials for the successful prosecution of its business. A magnificent property, excellent coal easily mined, facilities for delivering it in market, the mines now yielding a large production, and prepared to greatly increase it, energetic and judicious management should make this one of the most profitable of our bituminous coal companies. That those last conditious are not wanting must be evident from an inspection of the list of director's names: H. H. SHILLINGFORD, CHARLES W. TROTTIE, GEO. HOWELL, H. W. BURROUGHS, ALEXANEER J. DERBYSHIRE, and ZOPHAR C. HOWELL.

Statement of Ore, Bullion and Base Metal Yield for June, 1875.

UTAH.		COLORADO.	
Gold dust, estimated	$ 800	Gold and silver bullion, bars	$224,000
Silver bars	80,000	Gold dust and retorts	129,000
Lead, rich in silver	350,000	Lead and copper, free from gold and silver	40,000
Copper and lead	6,200	Ore shipped out of the Territory	150,000
Ore shipped out of the Territory, silver, lead and copper	102,000	Coal	118,000
Iron ore	800	Total for the month	$661,000
Coal	36,000	SUMMARY.	
Total for the month	$575,800	Colorado	$661,000
NEW MEXICO.		Utah	575,800
Gold dust and retort	$ 14,000	New Mexico	158,000
Silver bars	47,000	Grand total	$1,394,800
Ore shipped	97,000		
Total for the month	$158,000		

—Georgetown *Mining Review*.

The Ore Market.

Prices do not show any great change, being already at high figures. Shipments East are confined to the very highest grades of ore, and although, as per above statement, these have amounted to nearly a quarter of a million of dollars, it is probable that as the large reserves that have accumulated during the Winter are worked off, this will show a considerable falling of, and a corresponding increase will be made in the amount of bullion produced at home. The following are ruling prices for ores:

GEORGETOWN, COL.			ALMA AND BLACK HAWK. B. & C. SMELTING WORKS.		
No. of oz.	Price per oz.	Price per ton.	No. of oz.	Price per oz.	Price per ton.
100	$ .60	$ 60	50	$ .40	$20 00
150	.84	126	70	.57	39 90
200	.92	184	100	.74	74 00
250	.96	240	150	.86	129 00
300	1.00	300	200	.96	192 00
400	1.04	416	250	.98	245 00
500	1.06	530	300	1.00	300 00
1000	1.11	1110	500	1.07	535 00
			1000	1.12	1120 00

SALT LAKE, UTAH.

Salt Lake prices are regulated as much by the percentage of lead as of silver, and may be stated about as follows: Ore containing 45 per cent. in lead, and 60 oz. in silver, will sell for $60 per ton. If the ore goes above 45 per cent. in lead, add 75 cents for each one per cent. If it goes below 45 per cent. in lead, deduct 75 cents for each unit, down to 30 per cent. If the ore assays above 60 oz. in silver, the price increases per oz. Ore containing 44 per cent. of lead and 39 oz. in silver, sells for $1 12 per ounce.

AUSTIN, NEV.

Reduction charges $35 per ton, after deducting 20 per cent. of the assay value of ores carrying 400 oz. of silver or less, per ton, and 18 per cent. of assay value of ores of a higher grade.—Georgetown *Mining Review*.

A Handsome Coal Revenue.—The Concord Railroad, over its Manchester and Portsmouth branch, is said to have hauled last year from the coal yards in the latter city 360,000 tons of coal. This line is now hauling from 800 to 1000 tons per day to Manchester, a distance of 40 miles. The freight is $1 75 per ton, and, as the city of Manchester requires 200,000 tons per annum, this gives the railway corporation a revenue of $268,000 a year from coal alone. The road is operated on a lease of 99 years at a yearly rental of $25,000.—Boston *Commercial Bulletin*.

The Transportation Charges on Petroleum and the Columbia Conduit Company.

THIS Company is at last delivering crude oil to the refiners in this city direct from the wells without railroad transportation. The rates are established by the following notice from the company:

"The rates established by the arrangement between this Company and the Baltimore & Ohio Railroad, and the operating freight arrangements for the transportation of oil, are as follows: The Columbia Conduit Company takes oil at the wells, and agrees to deliver it at Baltimore in the shape of refined at the rate of $1 15 per barrel on the basis of crude, which is a reduction of 26 cents per barrel on the rate shown by the tariff of the Pennsylvania Railroad. On the oil delivered to the refiners here, a pipeage rate is charged largely in excess of the proportion due to the Conduit Company under the $1 15 rate; but the receipt given for the payment of this pipeage entitles the holder to transportation of the refined product to the seaboard on payment of the balance required to make up the full $1 15 rate. These receipts are assignable, and a refiner desiring to sell his oil in this market can sell his receipt or certificate to any other refiner or dealer who may have oil to ship over the Baltimore & Ohio Railroad to the seaboard. It will be seen that this arrangement is a great improvement over that which has heretofore hampered our refiners. The new rate is a material reduction, although not so much as we hope is destined to be established. We can also say in this connection that the oil taken by this route, from the wells to the seaboard, will be refined in Pittsburgh refineries, as the Columbia Conduit Company have no intention of extending the pipes to the Pittsburgh and Cleveland track. The cost of transporting the refined product from the refineries to the Pittsburgh and Connellsville track, which has heretofore been somewhat of an item of expense to shippers by that route, will under the new arrangement be covered by $1 15 rate, so that that amount represents the entire cost of transporting a barrel of crude from the wells to the seaboard, allowing it to be refined *in transitu*."

The Pittsburgh *Commercial* referring to the above says:

"The oil refiners do not see any advantage to them in the late arrangement between the Baltimore and Ohio road and the Conduit Company. A conference, held on Tuesday, between the refiners and the corporations named, resulted in nothing further than this—that the present rates must be adhered to. The best through rates on oil offered by the road and the pipe company was, from the wells to Baltimore, $1 15 per barrel on crude, or $1 53¼ on refined oil."

The *Chronicle* says: "On the other hand, the Pennsylvania Railroad gives a through rate of $1 63⅜ on each barrel of refined from the wells to the seaboard, and it should be here stated that charges at Baltimore are eight cents per barrel in excess of Philadelphia, making the difference in total charges only about two cents per barrel, in favor of the Baltimore and Ohio route and Columbia Conduit Company. This very slight difference is more than counterbalanced by the inconvenience attending the shipment of oil around the "Point" by the rivers. Barges frequently stick at Arsenal Shoals, and are generally delayed.

"Another argument in favor of the Pennsylvania Railroad shipments lies in the fact that its sidings permit the shipment, if desired, of 500 barrels per hour, while by the Baltimore and Ohio line 500 barrels is a good half day's work.

"Again, shipment around by water to the Connellsville Railroad necessitates the temporary stoppage of the refinery, inasmuch as oil cannot be gotten away as fast as it is refined. Altogether, in giving a large quantity of their trade to the Baltimore route and the Conduit Company, our refiners seem to have exchanged the frying-pan for the fire."

Condition of Mining in Gilpin County, Col.

GILPIN COUNTY is not yet entirely freed from the effects of disasters incurred during the old flush times, and still labors on heavily and slowly, and under many disadvantages. That it does advance in prosperity, however, is clearly demonstrable, though even its best friends sometimes are gloomy over its prospects.

The following is a summary of bullion yield, for the six months ending June 30th.

Retort gold from stamps	$578,000 00
Gold Bars, (B & Col. Sm. Works)	246,000 00
Copper	160,000 00
	$984,000 00

To this should be added about $40,000 worth of silver which was contained in the gold ores treated by the Boston & Colorado Smelting Works, making the half-yearly yield something over $1,000,000. If this production is maintained throughout the year, the total for the county will show a gain of $450,000 over the figures for 1874. There is every prospect that this will be the case, as the first half of the year is usually the worst, owing to the cold weather of the months of January to May.

The strong point in Gilpin County is that its entire business is transacted within its own borders. Not a pound of ore goes abroad for treatment, and not a pound of matte* for refining. Besides, something over $900,000 worth of ore is annually brought in from surrounding districts and reduced to metal at Black Hawk, affording steady labor to a large number of men. The actual metal shipments from Central being only exceeded by Virginia City, Pioche and Eureka. For the half year ending June 30th, these shipments have amounted to $1,665,000.

The weak point in her mining industry is the unfortunate sub-division of many of the best lodes into short claims, very few of which can be worked alone with profit. The owners are eastern men, who, by reason of the repeated failures to realize any return from their investment in the early days, will neither try the fates of war again, nor allow any one else to touch their property. So often have they been swindled and disappointed, (generally by their own carelessness), that they decline to do anything.

This condition of things cannot last always, however. Already a consolidation of interests has been effected on the Bobtail and Gregory lodes, and should the result prove favorable the same course will undoubtedly be pursued on the other great veins. When various independent claims on the Gunnell, Kansas, Burroughs, Bates, Castro, and Mammoth are consolidated under one management, so that each of these magnificent veins can be worked throughout its length by one system, the time will have arrived when Central, as a gold producing district, will have no equal in the West.

* Excepting the rich copper-gold shipped to Boston.

For the month of June, the shipments have been as follows:

Gold retorts and dust	$109,575 00
Gold bars (approximate)	41,000 00
Silver bars	69,431 00
	$220,006 00

The Boston & Colorado Smelting Works have on hand $160,000 worth of copper ready for shipment.—Georgetown *Mining Review*.

Semi-Annual Statement of Gold and Silver Yield in Colorado, for the Six Months from January to July, 1875.

The following returns are from our excellent contemporary, the *Mining Review* of Georgetown, Col., which, under the management of Mr. T. F. VAN WAGENEN, E.M., is the most able and reliable mining journal in the West:

"Our returns from all sources are not complete, and the following table is not, therefore, entirely accurate. The error, however, will not amount to more than a few thousand dollars, and occurs principally in the item of gold dust from placer workings.

"But very few of the placer mines have made any clean-ups yet, though the washing season is about two months old. The total for the first half of the year will, therefore, not be as large as that for the last half by a very large amount (the annual yield of dust being about $300,000, more than three-quarters of which has yet to be returned.)

"The lead yield shows a very large falling off, owing to the fact that the Golden & Lincoln City works have been entirely idle. There is, unfortunately, no prospect for an opening this year, and the pig-lead yield will probably amount to almost nothing for 1875.

GOLD.		
Retort Gold from Central	$578,000	
From Boston and Colorado Smelting Works	246,000	
Dust from placer workings	148,000	
From Stewart Silver Reducing Company	3,700	
Retort gold from Boulder and Park Co's	50,000	
Other sources*	27,000	
Total		$1 052,700
SILVER.		
Bars shipped by B. & Col. Sm. Works	$686,000	
" " " Nederland Mill	75,731	
" " " Stewart S. R. Co.	141,780	
" " " Judd & Crosby Mill	105,383	
" " " Pelican Mill	84,240	
Other sources†	8,000	
Total		$1,104,134§
ORE SHIPPED.		
Silver ore from Georgetown	$575,000	
Other sources‡	260,000	
Total		$ 795,000§
Copper shipped from B. & Col. Sm. Works	160,000	
Lead, principally from Denver	5,000	
Total for the half year		$3,116,843

* Includes gold bullion from San Juan, Sunshine, and dust from scattered districts west of the range, and near on the plains.

† Includes silver bars from Rosita, Montezuma and San Juan

‡ Includes private shipments from Georgetown, San Juan, Denver and South Park, and rich tellurides from the Gold Hill and Sunshine.

§ There are two errors in these tables, but we are at a loss to know whether they are in the item, or in the tables.—ED. E. & M. J.

Notes.

The Philadelphia & Reading Coal & Iron Company have reduced the rents of the miners' houses in this locality, between 20 and 30 per cent. Creditable to the company.—*Mahanoy Valley Record*.

Furnaces in the Hanging Rock region.—There are 85 blast furnaces in the Hanging Rock region, 22 of which are abandoned, most of the latter being situated in Kentucky, where nearly all of the early furnaces erected in the district were located. The first furnace erected in the region was the Argillite, at Greenup, Ky., in 1822, which had a daily capacity of one ton. The furnace is abandoned. The daily capacity of those not abandoned is 586 tons. The largest furnaces are the Alice and Blanche, at Ironton, Ohio, which are 90 feet high and 18 feet across the boshes, and have a capacity of 60 tons each per day. Sixteen of the furnaces are bituminous coal. All the abandoned furnaces are charcoal.—*American Manufacturer*.

The Nottingham Breakers at Plymouth, Pa. The improvements made by the Lehigh and Wilkes-Barre Coal Company at the Nottingham Colliery are very extensive. The shaft has received new timbers and guides from top to bottom, and the pump is so improved as to take water at once from the bottom, a distance of 300 feet; the engine-house has been remodeled, powerful and improved engines have replaced the old ones, and a spiral drum has been put in; the fireroom has been moved, and now twelve 30-feet boilers supply the steam power and a reservoir holding several hundred barrels of water was constructed under the coal room. The breaker has been enlarged and made almost entirely new, and is now one of the largest and most complete breakers in the valley. The roof of the headhouse is 145 feet high. The regular capacity of this new Nottingham breaker is one thousand tons per day, and it is expected, to be ready to start up the 1st of August. Mr. F. E. TIFFANY, superintendent for the west side of the river, resides here, and is proving a valuable foreman. The company are now shipping by the several railroads about four hundred cars per day from Plymouth breakers Nos. 11, 12, 13 and 16.

Exports of Coal from Great Britain for first six months of 1874 and 1875.—We take the following from Messrs. J. P. HIGGINSON & Co's list, showing exports of coal from January 1st, to June 30th, 1874 and 1875.

	1874. tons	1875. tons.
West Indies	144,941	162,868
North America	133,872	112,169
South America	412,057	456,013
	690,870	731,050
Increase		40,180

The item of North America includes exports to the United States of 42,163 tons in 1874, and 47,947 tons in 1875, showing an increase this year of 5,784 tons. New York shows an increase of 871 tons; Philadelphia, (no receipts in 1874) 1820 tons; San Francisco 6,598 tons; and Boston only 11 tons.

Argument of Franklin B. Gowen, Esq.,

BEFORE THE JOINT COMMITTEE OF THE LEGISLATURE OF PENNSYLVANIA, APPOINTED TO INQUIRE INTO THE AFFAIRS OF THE PHILADELPHIA AND READING COAL AND IRON COMPANY, AND THE PHILADELPHIA AND READING RAILROAD COMPANY, AT ATLANTIC CITY, NEW JERSEY, JULY 29TH AND 30TH, ON BEHALF OF SAID COMPANY.

SPECIALLY REPORTED BY D. F. MURPHY.

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: I have to congratulate you on the near approach of the end of your labors; and I can, to some extent, congratulate myself that, for the first time during this long investigation, I am permitted to say something for myself and for the company I represent. I shall speak to you in two characters—first, the representative of the Reading Railroad Company, answering the general allegations made against us which led to the investigation; and, second, in the narrower sphere of a lawyer, criticising the testimony that has been brought before you. With reference to the charges that have been brought by the retail coal dealers, I take it, they must either stand or fall upon the testimony that has been offered before you. But there is a very much broader field than this. When the Legislature of Pennsylvania appoints an investigating committee to see whether a great corporation has not violated its charter, such committee cannot be confined to the simple investigation of a charge of underweights or a charge of car detention. What I mean is better illustrated by the remark that if you were to be confined with reference to the whole scope of your investigation to the simple testimony adduced before you, it would follow that if the retail coal dealers had offered no testimony at all, you could have made no investigation; and hence, I shall ask you to listen to me when I speak of general topics of business and public policy as affecting the relations of a great coal-carrying company to the Commonwealth of Pennsylvania, from the legislative power of which it derives its charter.

The Reading Railroad Company was chartered in the year 1833, for the purpose of building a railroad from Philadelphia to the town of Reading. Within a year or two its powers were extended to enable it to locate its line and construct its road to the anthracite coal regions of Schuylkill County. The road was opened to the coal region in the year 1842, and from that time until the commencement of these difficulties it has been carrying out the object of its charter, fairly to the public, honestly to the State, and often, for many years, at great loss to its promoters. From a small line of fifty-eight miles of single track in 1835, it has extended itself throughout every valley of the Schuylkill and Mahanoy coal fields, offering an avenue to every one who desired to send his coal over its lines, and in the year 1870 it operated 1,168 miles of single-track railroad, of which 466 miles were located in the coal fields alone. I ask you to glance at this map [exhibiting a map] to see the extent of territory that was opened by the coal laterals of the Reading Railroad. You have seen it probably before; it represents the various lines built by this company for the purpose of developing the anthracite coal fields which had no other avenue to market than those owned by the company I represent; and I call your attention to it for the purpose of showing you how fairly and honestly this railroad company fulfilled the objects of its charter, in offering facilities to all persons to make use of its line, irrespective of who they were, and irrespective of the particular locality of their mines. Wherever an opening was made, in any part of the coal field, for a colliery, the Reading Railroad Company built a railroad to it without cost or charge to the projectors of the improvement. It has expended hundreds of thousands of dollars in new lines, often expended as high as $40,000 or $50,000 for a line to open a single colliery, which afterward turned out to be in fault, and from which no business was ever derived.

In the year 1870 it carried 4,633,00 tons of coal; it transported 1,754,000 tons of merchandise; it carried 2,034,000 passengers. Its capital at that time was $41,000,000, and its annual rent account for leased lines of railroads and canals represented $20,000,000 additional, making $61,000,000 invested in a business that depended for its prosperity and success upon the carriage of anthracite coal. Up to this time—to wit, 1870—the Reading Railroad Company was the most determined opponent in the State of Pennsylvania of the policy of permitting railroads to be owners of coal lands or miners of minerals. It had nothing to fear from any adversary in any region. The coal fields which it developed were the nearest to tide-water—ninety miles against one hundred and twenty to one hundred and fifty for the other regions; its road was down grade to tide-water; a locomotive engine could carry seven hundred tons of coal to a train. It could have maintained itself without the ownership of coal lands, and without any connection with mining, against any rival that then existed, if such rival had been nothing else than a common carrier.

I may say here that this company had some right to the protection of the Legislature. Having been chartered for this object, having accomplished this object, having secured a larger tonnage than any other company, it had a right to be protected by the Legislature of Pennsylvania, so that its business should not be destroyed. I do not say that it had the right to such protection as would have prevented another railroad being built to compete with it by constructing a parallel avenue of transportation. Such, however, is the policy of France, and I doubt whether any better railroad policy exists in the world than the railway policy of France, which has parceled out its territory to six or seven large railway companies, and prevents any encroachment within those territories from any rival company, thereby protecting the railway at the same time that the public is protected against undue oppression by a government inspection of the charges for freight and transportation.

We could not have asked for such protection in Pennsylvania; but we had a right to ask that that which was withheld from us should have been withheld from our adversaries. But, instead of this, and at the time when the Reading Railroad Company had no right to own mines, or to own coal lands, or to engage in the business of mining coal to supply its line with tonnage, every other Pennsylvania coal-carrying corporation whose outlet was the city of New York had such right. The Delaware and Hudson Coal Company was chartered by the Legislature of Pennsylvania, and had the right to mine coal, to own coal lands, and to transport coal. The Delaware, Lackawanna and Western Railway Company, chartered by the State of Pennsylvania, had the same right. The Pennsylvania Coal Company, chartered by the State of Pennsylvania, possessed exactly the same right. The Lehigh Coal and Navigation Company, chartered by the State of Pennsylvania, possessed the same right. The Lehigh Valley Railroad Company was the only company which originally was in the same position as the Reading Railroad Company, but by its merger with the Beaver Meadow Railway, it acquired the right to be an owner of coal lands as well as a transporter of coal. We might not have complained of this had these other companies confined themselves to the basins of coal they were originally intended to develop, namely, the Wyoming and the Lehigh coal fields. Each one of the avenues of transportation controlled by these five companies, led directly to the city of New York; the business of each of them was to build up the city of New York with the produce of Pennsylvania, in antagonism to the Reading Railroad Company, whose only outlet was the city of Philadelphia. We were the only company that was exclusively a Pennsylvania corporation. Every ton we carried to tidewater went through the city of Philadelphia, and added to the prosperity and the commerce of that great metropolis, and the traffic of every one of our adversaries was tributary to the commercial prosperity of a rival city—taking the produce of our very State to build up a rivalry which eventually would have destroyed Philadelphia in the scale of commercial importance, had it not been for what we have since done. We could not have objected, however, to the action of these other companies, had they confined themselves to the coal fields they were originally chartered to develop; but, having spread themselves over the entire Wyoming coal field, having taken up almost all the smaller basins in the Lehigh field, they turned their attention to the Schuylkill and the Mahanoy coal fields, and what was the position of the Reading Railroad Company in the year 1870?

I now ask your attention to a map, which is the same as the one I have just shown you, but upon which I have located these rival lines which were gradually encroaching upon what we called our own territory. [Exhibiting map.] The lines in black are the lines of the Reading Railroad Company. We found, in 1870, and prior to that time, that the Lehigh Valley Railroad Company had extended a line of railway through the heart of the Mahanoy coal field, side by side with our own. It had purchased large bodies of lands, represented here by the color of green, and was engaged in diverting a traffic, which originally had gone by the Reading Railroad to Philadelphia, to the city of New York, by its own line. The Pennsylvania Railroad Company had acquired the control of the Northern Central Railroad, and through it had secured the Lykens Valley Railroad and the Shamokin and Pottsville Railroad. The former was extended into our southern field at its western end. [Indicating on the map.] And this rival company had already secured such an amount of land, as is here represented, side by side with our own. The Shamokin Valley and Pottsville Railroad, which entered the coal field from Sunbury, was extended, where this line marked in red is indicated, and it had already secured the large body of lands marked in red. Further than that, a coalition between the Lehigh Valley Railroad Company, the Delaware, Lackawanna and Western Railroad Company, and the New Jersey Central Railroad Company was formed for the purpose of building a railroad along almost the entire length of the southern coal field. These three large and wealthy corporations united and located a line from the neighborhood of Tamaqua, running where this line is indicated (pointing to the map) almost through the very center of the southern coal field.

Such was the position we occupied in the year 1870. We should have had nothing to fear from any rival railroad competing as common carriers with ourselves; but when these large companies, with a power to buy coal lands, located and projected lines into our very territory, and were engaged in buying up lands, for the purpose of sacrificing the profit of the miner to secure transportation for their railway lines, the result would have been, if we had not acted promptly, that in a year or two the company that we represented and the property for which we were responsible, would have been rendered almost entirely valueless, and all the tonnage which we now carry to the city of Philadelphia would have been diverted to the city of New York.

In this connection, I desire to refer to the Act of 1869, which has been alluded to by both of our friends on the other side. The allusion almost provoked a smile when I remembered the history of the Act and the desperate battle fought in the Legislature by the Reading Railroad Company against its passage. This Act of 1869, entitled "An Act to authorize railroad and canal companies to aid in the development of the coal, iron, lumber, and other material interests of this Commonwealth," was an Act of Assembly introduced into the Legislature entirely in the interest of the rival lines that I have spoken of, for the purpose of enabling them, after having located their roads, to buy lands, in our own territory. It was approved on the 15th day of April, 1869. I was at that time the counsel for the Reading Railroad Company, and I well remember the earnestness with which the company and its counsel opposed the passage of the bill. The utmost that we could secure, however, was that very amendment, which I believe was drawn by myself, and which prevented the Act having any operation in the county of Schulkill. We could do no more than that. It opened Northumberland County, where our lines were existing, it opened Dauphin County, where we already had lines of railroad and coal interests, to our adversaries; and the utmost that we could do was to keep Schuylkill County away from them; but it only kept Schuylkill County away from them so far as concerned the power to purchase the stock and bonds of coal companies, but wherever coal land was owned by individuals, they had the right to buy. Thus attacked, as I have shown, what could we do? Were we to lie still? Were the managers of the company to remain quiet and see the tonnage diverted from their own line? We had nothing to do but to fight the enemy with their own weapons. The policy had been inaugurated by the Commonwealth of Pennsylvania. Her legislative power had given to these rivals of ours an ability to defeat us in our own region and at our own home; and no other way in which we could protect ourselves was left open for us except that of becoming the owners of coal lands. But even before we had that right, and, indeed, before we determined as a company that we would adopt that policy, several gentlemen connected with the company, who had means of their own, bought up three or four large bodies of land which happened at that time to come into the market. The first purchase, I believe, was an interest in the Trevorton coal estate, from which the North Franklin coal is mined. An act of Assembly was introduced into the Legislature to incorporate the Franklin Coal Company, the object of which was to enable the purchasers to associate themselves as a corporation in the ownership of the three, four or five bodies of land which they had thus purchased. But events succeeded each other with great rapidity in those days. In the opening of 1871, we had one of the most disastrous strikes in the coal region that we have ever experienced; longer, I believe, than any which has ever since occurred, except the one from which we have just emerged. That strike completely prostrated individual enterprise, threw upon the markets large bodies of land which were at the mercy of the rival companies who were attacking us, and we determined to go into the matter as a corporation, and to ask the Legislature to pass an act of corporation for the formation of an auxiliary coal and iron company.

I desire to say to you, gentlemen, that corporations having the same powers as this Laurel Run Company were as plenty as blackberries in August. Charter after charter existed on the statute books of your Legislature, which were offered to us, one after the other, but we preferred to go to the Legislature ourselves. True, we gave no notice to our adversaries that we were doing so. Do our friends upon the other side expect business men, desiring to prevent rivals

getting the advantage of them, to serve upon such rivals a notice of the action that it was proposed should be taken? Did the gentlemen expect us to give such publicity to the Laurel Run Improvement Company as to defeat the very object of its charter? Why, we bought some of these lands over night; the large bodies occupying strategic positions in the coalfield were purchased before anybody knew anything about it. But the members of the Legislature were not deceived; there was no deception practiced upon them. In the hall of the Senate, Senator BILLINGFELT made a speech against the passage of this Act of the Assembly because it was avowedly in the interest of the Reading Railroad Company. There was not a man, no matter how humble his position, in the Legislature, or connected with it, who did not know that that Act of Assembly was intended for the Reading Railroad Company just as well as he knew that a supplement to the charter to incorporate the city of Philadelphia was intended for that municipality. There was no deception; no deceit. The matter was pressed through with as much rapidity, of course, as it could be, because the object was to defeat the rivals who were encroaching upon our territory; and if our friends on the other side suppose that we manage our large business in such a manner as to notify our adversaries of our intentions, for the purpose of enabling them to defeat the objects we have in view, they have formed a very low estimate of the capacity of the gentlemen who have been placed in charge of the Reading Railroad Company, and I am glad to be able to tell them that I do not think we are as dumb as we look.

The Laurel Run Improvement Company was organized. The gentlemen interested in the success of the Reading Railroad Company, who had bought out of their own means several large bodies of lands at very low prices—some of them worth now five times as much as they paid for them—conveyed every acre to the company at the same price they had paid for it, with six per cent. interest added. We bought one hundred thousand acres of land; we expended $40,000,000; and of that great sum of money not one penny of purchase-money was diverted to enrich a man who was in the pay of the company. And just at this point let me call your attention, as representatives of the Commonwealth of Pennsylvania, to the position which the rival ports of Philadelphia and New York occupy towards each other with reference to the anthracite coalfields. I have made a tracing copy of the map which Mr. LORENZ showed you in Philadelphia, and I desire you to glance at it for a moment [exhibiting map]. There is New York [indicating], and there is Philadelphia [indicating]. The large corporations that were our rivals had developed the Northern or Wyoming coalfield, and those several isolated basins known as the Lehigh coal region. Every avenue leading from these fields led to the city of New York, and all the traffic helped to build up its commerce and add to its prosperity. The city of Philadelphia, which is nearer to the coalfields than any other port, had no region to depend upon except the Schuylkill and the Mahanoy, and had no avenue leading to it, except such as were controlled by the Reading Railroad Company. What would have been the condition of the city of Philadelphia and the State of Pennsylvania if these New York lines had usurped and taken possession of the southern fields as they had of the northern? Why, gentlemen, we ship from the city of Philadelphia alone 2,500,000 tons of coal a year in vessels; we have shipped as much as 90,000 tons a week; and the commerce and the prosperity of the port of Philadelphia as a shipping port are much more dependent upon the industry which we bring to it than upon all others put together. I speak of it now as a mere commercial or shipping port; for you must remember that, though a cargo of coal is worth but little in money value, as compared with a cargo of oil, a cargo of silk, or a cargo of tea, yet the number of vessels coming and going, the tonnage of the port, is just as much affected by a cargo of coal as a cargo of silk, or a cargo of tea; the same number of mariners are required to work the vessels, the same number of ships lie at anchor for a ton of one as for a ton of the other, and each time a vessel comes to the port of Philadelphia to take away something that is produced or shipped there, and to bring something that is used, it adds just that much to the prosperity of the port which it has selected as its harbor.

We are exclusively a Pennsylvania corporation; we own no foot of railroad that is not within the borders of the State of Pennsylvania; we do no transporting business except that which is exclusively within the borders of Pennsylvania, or that which is necessary to carry by vessel from Pennsylvania to other places the products of our own Commonwealth; we owe no allegiance to any other State; we derive no power from any other Legislature. There is not within the whole State which you represent a corporation so exclusively a Pennsylvania corporation, or one so firmly devoted to building up the industrial interests of the Commonwealth in which we are located. Suppose that the two-and-a-half million tons of coal per annum which we ship from Philadelphia had been diverted to New York, what a position would the State of Pennsylvania be in; and how could you, gentlemen, answer your constituents for the manner in which you had performed your trust, when it was shown that this vast wealth, which the Creator has planted in Pennsylvania alone of all the States on the seaboard of our country, this vast wealth, upon which the State of Pennsylvania is more dependent for prosperity than upon any other, this great mineral treasure which has poured into the heart of Pennsylvania a stream of gold for the last thirty years, had been absorbed and controlled by five or six corporations owned in New York and held in New York, and with every avenue of transportation leading to that city and devoted to building up its commerce? When I think of this; when I look back over the last five or six years, and reflect what the State of Pennsylvania owes the Reading Railroad Company; when I think of what the city of Philadelphia owes to this company when I think of the earnestness and fidelity with which the gentlmen who have been intrusted with the management of this company have performed their duties to their own State, and of the prosperity to that State and its metropolis which will result from their efforts; when I think of all this, and then reflect upon what we have been subjected to for the last two or three months before this committee; when I think that this great interest, which I represent, and which has added more to the wealth of this State than any other within its borders, is to be stricken down and trampled into the dust at the dictation of a few petty coal dealers, I cannot help feeling that if they are to be successful it will not be the first time that

> A falcon, towering in her pride of place,
> Was by a mousing owl hawk'd at, and kill'd.

Right here, gentlemen, I desire to interject a few words upon the question of the policy of permitting railroad companies to be the owners of mineral lands and the miners of coal. If I were simply defending our own position, if I were simply to defend those members of the Legislature who with great unanimity voted for the passage of the Act incorporating the Laurel Run Improvement Company, it would be entirely sufficient for me to say that you had given this right to every corporation transporting coal to New York, and that you could not, in justice to your own Commonwealth and to her citizens, have denied it to us. That alone is amply sufficient to justify what you have done, and not only to justify you but to hold you up to honor in future time for the wisdom of a course that looked beyond the present and beyond the petty gains of retailers and factors, to establish a policy that should inure to the benefit of the State which you represented.

SENATOR RUTAN. That was the controlling argument.

MR. GOWEN. Undoubtedly it was. It was the controlling argument with the Legislature, and it was the controlling argument with the Governor, for the answer he made to us was: "I am opposed to this, but as every company that sends its products to New York has this right, I shall give it to the only one whose commerce adds to the prosperity of Pennsylvania."

But to go back to the question of general policy. I was brought up in the Democratic school of faith, and I may say that "after the most straitest sect of that religion I lived a Pharisee," and I was taught to believe that it was simply monstrous to give a corporation such powers as we now possess; but, while still adhering to the ancient faith, I have become a convert to the doctrine that there is no better hand to hold the power of owning and controlling mineral lands than the railroad companies that develop the territory in which they are situated.

In the first place, our coal field is a barren wilderness, a rough series of mountains and valleys, with masses of rock upheaved and stood on edge, which, to-day, but for the mineral wealth beneath it, would be as waste as the desert of Sahara. What is there to incite a company to develop such a coal field except the mineral wealth that it contains? Is it not important that it should be developed? And with the experience which we now have before us, what corporation would expend money in the development of a coal field if, after they had succeeded in building their lines and investing their money, the very business upon which they depended for their prosperity was taken away from them by others? Why, there would be nothing left for them. Hence, if you want the coal fields developed, you must attach them to the interest that develops them, so as to justify the expenditure of money.

In the second place, I have this to say: you have yourselves been through this coal region; you have seen the amount of capital it requires to open a colliery—two, three, four or five hundred thousand dollars; and in one or two places which you have seen, from a million to a million and a quarter of dollars to open a single colliery; you have seen the shafts being sunk near Pottsville, commenced by this company, to develop a bed of coal almost at the terminus of its main line, the existence of which has been known for thirty years to a demonstration, but the cost of development of which has deterred any individual owner of land from engaging in it. Those works, which will employ a thousand men and add five to six or eight thousand to the population of the town of Pottsville, will cost, when they are completed, probably from a million to a million and a quarter of dollars. What individual would engage in such an enterprise? What individual having one million of dollars would be foolhardy enough to place the whole of his property at the risk of a single explosion or in danger from a single spark? But I may be answered that corporations might have engaged in this work without transporting powers; that an aggregation of capital could be formed for the purpose of developing coal lands without transporting coal. But, gentlemen, would any capitalists engage in an enterprise unless they knew that for years to come an avenue of transportation would be opened to, and controlled by, them? Unless, therefore, the two interests are united, there would be little doubt whatever that many of the coal fields of this State would remain undeveloped hereafter.

But again, it is to the interest of a railroad company that fuel should be cheap, and I want to call you attention to this important point. The Reading Railroad Company depends for its profits upon the prosperity of manufacturers along its line. Just imagine what its condition would have been had these New York companies secured the control of the coal lands, and had said to the manufacturers in the State of New Jersey—and I presume I must speak very deferentially of the State of New Jersey, as we happen to be within it at this moment—suppose they had said to the manufacturers of the State of New Jersey and the State of New York who were along their lines, "Come here, and we will give you coal for two dollars a ton, and we will charge the people who are upon the line of the Reading road four for it," what effect would that have on the prosperity of the State of Pennsylvania? Why, gentlemen, what is the price of coal to us; that is, what is twenty, thirty or forty cents in the price of coal to us as compared with the large revenue we receive from those who use it upon the line of the road? We sell lump coal to the manufacturers to-day at two dollars and fifty cents a ton, just about the cost of that particular kind of coal. Suppose we sold it to them at fifty cents less than cost; suppose that, in order to build up our line, we should say "every man who locates his works upon the line of our road shall for twenty years have his coal at two dollars a ton," what do you think we should get for that ton of coal, selling it at two dollars? We would get four dollars for every ton of it. In other words, the ton that we sell at two dollars will bring to us an increased business of from five to ten dollars of gross receipts for every ton that is burnt in the process of manufacture along the line of our road. Such, I hope, will ever be the policy of the railroad company; and that is the reason the retail coal dealers in Philadelphia do not like us; that is the reason the factors do not like us. We have stricken down the intermediate profits, and we have said, and will say, to the manufacturers throughout the United States, "here is a company that owns lines of railroad in the heart of a rich agricultural region, where labor is plenty and always will be abundant; we own the coal lands, and we own the coal mines; and you can come here and locate your works in confidence that self-interest alone, and the worship of the Almighty dollar, generally supposed to be implanted in the breast of a corporation, without regard to any benevolent or philanthropic ideas in the minds of the gentlemen connected with the company, will induce us to let you have this fuel at less than you can buy it from an individual."

There is, however, another reason. A large corporation, such as we are, is held by the public and by the representatives of the public to a strict accountability. We would not dare to do what individuals do. When individuals controlled this coal field during the war, eight dollars a ton was the price of coal at the mines. Do you think the Reading Company would have dared to charge that sum, no matter how great the power it possessed? Do you suppose that a ton of coal which cost two dollars at the mines could have been sold at a profit of six dollars if the Reading Railroad Company had owned it instead of individuals? A few individuals during the war were selling coal to the United States Government to carry on the defence of the country at a profit of from three to four dollars a ton; but do you suppose that such a thing would have been possible under a corporation? Why, if we had attempted it we should have been pilloried as monopolists and then executed as traitors; and yet these individuals who handled the product of the mines during the war, and who made money so enormously out of war prices, are the very persons represented by those who now attack us for making a monopoly of this trade! Would the

Legislature have appointed a committee to investigate the conduct of an individual if he had charged this high price for coal? Oh, no! But when we reduce the price, to the injury of a Philadelphia retailer, the whole power of the State is invoked for our destruction. Hence, I say I am a convert, and I believe, as the result of experience, that there is no better policy than that of enabling the railroad companies to develop the coalfields in which their lines are located. But, gentlemen, let me call your attention to a few statistics, for we have some means of determining this question from actual results. I think you will all agree with me that the senseless clamor against corporations, simply because they are corporations, will have no weight whatever with you. I think you will admit that it is your duty, as it is the interest of those whom you represent, to so act that the State shall be prosperous; and you will agree that whatever increases the population and adds to the prosperity of the State should be encouraged, irrespective of whether the dollars and cents that result as profit from the work done are in the treasury of an aggregation of individuals called a corporation or in the pocket of one single man. The map which I have just exhibited to you shows that the Wyoming coal field for the last twenty years has been developed by corporations, and the Schuykill and Mahanoy coal fields have been the locations for individual enterprise. We have had, then, two well-defined and distinct systems of business in operation for nearly twenty years. Let us see by figures what was the result to the State of Pennsylvania.

The Schuylkill and Mahanoy coal fields together contain two hundred and thirty-seven square miles of coal; the Wyoming coal field contains only one hundred and ninety-eight; therefore, we have more land than they have. The Schuylkill and Mahanoy region, the Schuylkill particularly, was the first one opened. It is nearer to tidewater than any other. On account of the geological formation, the structure of the stratification, and the number of axes of depression and elevation, there are to the square mile more places for opening collieries in the Schuylkill and Mahanoy region than in any other. In addition to this, the upper strata of the coal measures, which are absolutely denuded in the Lehigh region, and partially washed away in the Wyoming region, exist intact in the Schuylkill. In other words, whereas in the Lehigh region they have but three or four veins of coal, and in the Wyoming from eight to ten, we have in many places in the Schuylkill region seventeen distinct strata, and to this extent, therefore, our capacity for annual production is greatly increased. Notwithstanding all this, what has been the result? In the year 1840, the Schuylkill region produced four hundred and ninety thousand five hundred and ninety-six tons of coal, and the Wyoming region produced only one hundred and forty-eight thousand four hundred and seventy tons. You see the production of the Schuylkill region was more than three times, nearly three times and a half, as large as that of the Wyoming region. In 1850, the Schuylkill region produced one million eight hundred and forty thousand six hundred and twenty tons, and the Wyoming region eight hundred and twenty-seven thousand eight hundred and twenty-three tons. This was about the period when the large corporations in the Wyoming region, of which I have spoken, were going into business extensively as miners of coal, and up to that time the increase had been somewhat greater in the Wyoming than in the Schuylkill. But now look at the next decade. The tonnage of the Schuylkill region had increased in 1860 to three million seven hundred and forty-nine thousand six hundred and thirty-two tons, or about double; while that of the Wyoming region had increased to two million nine hundred and forty-one thousand eight hundred and seventeen tons, or more than treble. At the end of the next ten years, while the Schuylkill had only increased in 1870 to four million eight hundred and fifty-one thousand eight hundred and fifty-five tons, or twenty-nine per cent., in ten years, the Wyoming region increased from two million nine hundred and forty-one thousand eight hundred and seventeen tons to seven million eight hundred and twenty-five thousand one hundred and twenty-eight tons, or one hundred and sixty-six per cent. within the same period. Here was an increase of one hundred and sixty-six per cent. against twenty-nine, due to the fact that the Wyoming region was controlled by large corporations who could expend money in developing the lands, and who were not liable to be prostrated by a monetary panic. If we had had twenty years ago the powers we now have, what do you think would to-day be the increased population of the valley of the Schuylkill and the increased commerce of the city of Philadelphia? I have shown you that in the decade from 1860 to 1870 the tonnage of the Schuylkill region has increased but twenty-nine per cent., while that of the Wyoming had increased one hundred and sixty-six per cent.; but I have had these statistics brought down to 1874, and I have been astonished at the revolution already worked in the trade in consequence of our advent into the business of mining and selling coal. In the four years from 1870 to 1874 the tonnage of the Schuylkill region had increased 33 23-100 per cent., and that of the Wyoming only 18 1-100 per cent. If there is anything more conclusive as a demonstration than this I should like to have it produced before you; and assuming that you, gentlemen, will close your minds to the senseless clamor against a corporation, and look only to the development of your own native State, look only to her prosperity and to the prosperity of her people, I think you will justify what we have done, and some of you will claim credit with your fellow members for having been among those who were present in the halls of legislation when this policy was extended to Schuylkill County by the incorporation of the Philadelphia and Reading Coal and Iron Company.

But let us look at the populations of these two regions as represented respectively by Schuylkill and Luzerne Counties. In 1850, Schuylkill County had a population of 60,713, and Luzerne only 56,072. In 1860 Schuylkill had 89,510, but Luzerne had already overrun it and had 90,244. In 1870, Schuylkill County had increased to 116,428, and Luzerne to 160,915, or an increase for Schuylkill in that decade, of thirty per cent. against seventy-eight per cent. for Luzerne. Of course, I have no means of making a comparison of populations since 1870, for no census has been taken; but I will venture to say that, owing to the work of this company in the Schuylkill region and the number of men employed and brought there, the ratio of increase in Schuylkill in the last four years will compare as favorably with that of Luzerne as the tonnage of the two regions during the same time.

There is one other subject to which, before I leave this part of the case, I desire to call your attention. I know that it is rather an invidious thing to appear before the public as the defender of a corporation, but let me say to you that a large corporation confers a benefit upon a community—which the latter cannot derive from an individual—in this respect. Take the Reading Railroad Company, for example; I have looked over the statistics of the company from its formation, and I find that the stockholders of the company have received an average of not quite six and a half per cent. upon their money from the time they invested it. They have never got more than an average of six and a half per cent. for their money, and if they were to sell out their property to-day at its market value, they would only get ten per cent. more for it than they paid for it forty years ago! You will admit that all this aggregation of property which we hold is a benefit to the public; you will admit that the public gets the use of it; and let me ask you, if it were owned by an individual, would he give the use of it to the public at a rate of interest which is not five per cent. upon its value? If any of you gentlemen had bought a house forty years ago, would you let the community use it to-day at ten per cent. of what you paid for it, if it was now worth ten times as much as you gave for it? You have been at Port Richmond. The Reading Railroad Company owns a body of land and wharf facilities there which would be represented in value by a sum of ten million dollars; they never charge one penny for its use; it is given free to the public; there is no charge for the use of the wharves at Richmond. These very gentlemen who attack us, who have been witnesses here, who are trying to break down our charter, are making money by the occupancy of our property without a dollar of annual rent. If it belonged to an individual would that be the case? The capital of the company was formed forty years ago, and its property was purchased at the low value which it then possessed, and although that property may have increased tenfold in value, it measures the demand of its stockholders by an annual rate of ten per cent. upon the original investment, which is not five per cent. upon its present market value. The annual dividend paid out by the Reading Railroad Company to its stockholders is not five per cent. upon the appraised value of its property. What individual owning property would permit the public to use it at that rate? Would he not sell it out and realize? The people never think of this. They say, "Oh, you are paying ten per cent. dividends." But upon what capital are we paying ten per cent.? Upon the capital we invested forty years ago. You may have bought a house on Chestnut street forty years ago for five thousand dollars, and it is worth one hundred thousand to-day; do you rent it to an individual at ten per cent. upon the five thousand dollars—rent it for five hundred dollars when you can get ten thousand dollars for it? Surely not; but the corporation whose capital is measured by its stock, charges the public but ten per cent. upon the value of its property at the time it was bought, and adds nothing to it for the increased value. In other words, the stock of the Reading Railroad Company has never been increased, owing to the increased value of its property. During the war, when the company was making a great deal of money, it did not pay cash dividends, but kept the money and increased the capital due to the expenditure of the earnings; but for $17,000,000 of profits invested it only increased its capital $12,000,000, so that the increase should be measured by a gold standard of value, and hence, notwithstanding the increase of capital, the money it represented was invested in property, and the rate of interest paid to-day is a rate entirely inadequate to the market value of its assets.

Having gone over these general subjects, I now come to the entrance of the Philadelphia and Reading Coal and Iron Company into the business of mining coal. Our first intention was never to mine a ton of coal. The idea was that the ownership of these lands would be sufficient to attach the tonnage to us, and that we could get individuals to mine the coal at a rent. That was the policy inaugurated by the company; and to develop it they expended probably $800,000 or $900,000, simply in loans to individuals to enable them to get into business. We built collieries, rented them to individuals, and advanced money on mortgage; and had it not been for the terrible demoralization of labor in the coal regions, resulting in strikes, individuals would have been able to do all that we wanted. But we had, during the time I speak of, a succession of strikes which entirely destroyed individual enterprise. There was no man who had the capital to stand up against them; six months out of a year they were idle; and we saw that we had to "take the bull by the horns" and go into the business of mining ourselves. There was nothing else left for us to do. We tried honestly and sincerely for nearly eighteen months to develop these lands and work them by individual enterprise; nay, more than that, when we found that would not do, in several instances we opened the collieries and associated men of known experience with us as partners in mining, and let them have the business; but that was also unsuccessful, and we had to take hold of the coal trade as we took hold of the railroad, establish ourselves in it as a large corporation, with fixed rules, and the result has been what you have seen and have been investigating.

Look now at the manner in which the business was conducted in those days, and what it became necessary for us to do. You have heard enough from the evidence to know that it was a rare exception when the miner sold his own coal. There had grown up a system of business by which factors, gentlemen of wealth, established themselves in the port of Philadelphia, and the terminus of the Reading Railroad, and took charge of the product as it reached tidewater. I do not wish to reflect unnecessarily upon these gentlemen, nor do I suppose that they deserve to be reflected on. They had a right to earn money in that way; it had been established by custom; but I say to you that there never grew up and flourished a more iniquitous system in the world, and every man who has been mining coal in Schuylkill County for thirty years will testify in my favor upon that point. They levied a charge of twenty-five or thirty cents a ton for the mere sale of the coal, entirely irrespective of the sum of money it brought. The lower the coal sold the better for them, because they sold upon a guarantee commission, and if they sold for two dollars they had only half the money at stake that they had when they sold for four. The Reading Railroad Company in those days weighed coal strictly to the very pound, and allowed five per cent. for waste, and it allowed ten cents a ton as bonus for every car that was dumped at Port Richmond before four o'clock of the day it came down. The practice that had grown up in Philadelphia was that the five per cent. for waste and the ten cents for the dumping of the car were taken by the factor as a consideration for his paying the shipping expenses. When the shipping expenses were twenty cents a ton the aggregate of these two items (the dumpage and the five per cent.) was about thirty cents; and so there was an additional profit of about ten cents, and I am within bounds when I say that the average profit of doing this business was about forty cents a ton, so that when coal sold for one dollar and seventy-five cents at the mines, nearly twenty-five per cent of the value of the product was paid to the middleman for passing it through his books. These gentlemen, the factors, sat at the water's edge like leeches sucking the life-blood of a healthy trade, and as one after another dropped off, gorged to repletion, others took his place, until the emaciated body handed over to us hardly seemed worth the effort of preserving. Everybody knew it; it was the talk of the community. I practised law for ten years in the county of Schuylkill, and in all that time, and up to it, there were but three men who had ever retired from the business of mining coal with any money, and one of those died in an insane asylum, and another had softening of the brain. The shock was too great to their systems.

Why, gentlemen, there was no Orphans' Court business in that county. I never drew a will in my life but one, and the man for whom I drew that had

no money. Every man's estate was settled by the sheriff before he died. I lived through all these times in that county, and I am glad to say that it was the result of that experience which enabled me to make a vow that if it ever came into my power I would try to do something to make that county prosperous. A remark that escaped Dr. ROMMEL upon the stand is very suggestive. Our friends on the other side assume that every man who went into the coal trade failed because he was not a man of capital or not a man of business habits. Mr. PETTIT, I think it was, in examining Dr. ROMMEL, who was one of these factors, said to him, "I suppose these men went in without capital, and then I suppose they went along, and they came to grief."

"Yes," said Dr. ROMMEL, "they came to Walnut street," and I suppose in his vocabulary the words are synonymous.

These gentlemen, the factors, are the principal complainants in this case. They are represented on the stand before you by Mr. VANDUSEN, of whom I desire to speak very kindly, for although he had lost his business he spoke very kindly of us, and I do not know that he ever did anything of which I have any right to complain. He feels very naturally, not exactly indignation, but something which is akin to indignation, at having been driven out of his business; the other representatives are Dr. ROMMEL and Mr. BORDA, and they were the only three examined. Dr. ROMMEL was the owner of a colliery and Mr. BORDA the owner of two collieries. Bless your souls, gentlemen! they never complained of the enormous power of the Coal and Iron Company when they were selling their collieries to us. They took our money as if it were their mother's milk, and you never saw men more anxious for it. Mr. BORDA sold us his collieries at a large price. and I have no doubt those gentlemen looked with eager eyes to the time when a great corporation, as we were, would become the miners of coal, and when, instead of selling fifty thousand, sixty thousand, or one hundred thousand tons of coal by factors, we would turn our business over to them and let them get forty cents a ton out of an annual product of millions of tons. But we were not to be caught in that way. Having once concluded to go into the business, we made up our minds that we would sell our own coal. You see, therefore, the reason for the opposition of these gentlemen. We shipped last year, of the business formerly done by the factors, one million three hundred thousand tons of coal. At forty cents a ton, here was five hundred and twenty thousand dollars annual profit taken out of the pockets of eight or ten men. No wonder they look angry. No wonder they declare war; and Mr. BORDA appears here in the position of Achilles and Thersites in the eventful Illiad which is to end with the destruction of the company. Think, gentlemen, of five hundred and twenty thousand dollars a year for doing nothing taken out of the pockets of eight or ten men! No wonder that they think very badly of us, because we deprived them of the profits in which they were accustomed to participate.

Another word about this subject of middlemen. Some years ago I was in the State of New York, and, I think, one of the most interesting business operations I ever saw was the manufacture of cheese by the farmers in that State. There is no more perfect system in the world than the combination of farmers for cheese manufacture which exists in the State of New York; and when we can bring the production of coal within rules as strict as theirs, and manage our business upon principles as broad and comprehensive as they do, we shall have attained the perfection of a commercial enterprise. Every farmer whose cow produces the milk that enters into the cheese gets just such proportion of the price which the cheese brings in Liverpool as is due to the proportion of milk that entered into its consumption, and there are no middlemen in it. Fifty or sixty or one hundred farmers unite and send to a cheese factory the milk from their cows. They fatten their hogs off the offal, and the man who makes the cheese gets a certain sum per pound for making it; and so hundreds of other cheese factories throughout the State of New York do the same, and they have an agent paid by the association in Liverpool, and one paid by it in other parts of Europe, and the cheese is sold on the account of the owner of the cow in the markets of the world, and there are no middlemen connected with it. Why should the producer be fleeced for the purpose of paying a profit, which, if due to the business, ought to be due to him whose capital is risked in its prosecution. Why, gentlemen, look at the grain trade. What would become of the prosperity of the United States of America if the great grain trade of this country, which goes into our international exchanges and adds to the value of our commerce, were levied upon as it went down to the water's edge by a band of factors and despoiled at the rate of twenty-five per cent. upon the original value to the farmer? Is it not just as important for the Commonwealth of Pennsylvania that any product of its soil should be directly sent to market, and that the business should be as prosperous as is the grain trade or should be? The coal taken out of the bowels of the earth represents a sum of money, say of fifty cents per ton, which adds just that much to the wealth of the State. It enters to some extent into the national exchanges; to a great extent into our inter-State exchanges. Why should individuals, who are neither producers nor consumers, levy upon this trade on its way to market, and deduct from its owner twenty-five per cent of its value? If any system can be devised for the benefit of the owner of the colliery, whose capital is invested in the business, whose skill it requires to make it successful, whereby the coal sold in Boston is sold for his account, is it not to his advantage, and to the advantage of the men who work for him, that it should be adopted?

We formed what has been called the "pool." We had twenty or thirty of our own collieries. We had a business of from a million to a million and a half of tons of our own to commence with. That was nearly ten times as large as any business that had ever been done before by a single factor at Richmond. It was, therefore, necessary for us to have our offices in New York, and in Boston and in Providence, and to complete all the preparations for an extensive mercantile business. We had to have agents; we had to pay them salaries; they had to be employed and paid to attend to our own business, and it cost us nothing more, except the risk of the failure of those to whom we sold the coal, to do a business of an additional million of tons per annum for others. The clerk who makes out a bill for five hundred tons of coal can just as well make it out for five thousand. It costs him no more labor. A purchaser who buys fifty thousand tons of coal can just as well buy it from us as buy it from eight or ten different men, as he had to do before. Therefore, taking the business of this pool, the business of other men in addition to our own, added nothing to the cost of our business except the mercantile risk that resulted from our guaranteeing the payment for sales, which risk we assumed to be measured by about ten cents a ton. Hence we said first to eight or ten coal operators, "You have been paying thirty or forty cents for selling your coal; your business has not been a prosperous one. If you want to, and if you will pledge yourselves to prepare your coal properly, we will sell it for you at ten cents a ton." They accepted the offer at once, and then one of them said to me, "Now, Mr. Gowen, you have made us a very liberal offer; it is going to work a revolution in the coal trade, and I simply suggest for your consideration this: that as up to this time you have only spoken to us who are miners in Schuylkill County, and who have factors to sell our coal, you ought to give the benefit of this offer to every man who sells his own coal, for even those who have their wharves at Richmond can do better by accepting your offer than they can by keeping in business. In other words, the office facilities, clerks and sale agents they have to keep up for one hundred thousand tons, cost them very much more than the ten cents a ton that you propose to do the business for; and, in addition to that, they have got to run the risk of their sales." "Very well," I said, "I think that is a good suggestion, and we will call a meeting of every man at Richmond interested in a colliery, and will make him the offer;" and from this resulted that terrible meeting about which so much has been said, and at which I made the unfortunate remark that "I might become ugly," which my friends, I hope, now understand related entirely to my personal appearance! I have not heard anything about the unfortunate expression lately, and I suppose they will accept my explanation of its meaning. Having called the meeting, we said to some eighteen of the miners who sold their own coal: "We have made arrangements to sell coal, and if you, gentlemen, want to do so, you can avail yourself of it." Well, there was a burst of indignation, because no corporation is ever believed to be honest. I have been subjected for some years to the humiliation of occupying a position in which I am forced to infer that almost every man who comes to see me supposes I am a monster and an oppressor. I endeavor to control my temper as well as I can, and whenever I can find somebody to take my place I shall be happy to go back to practising law and to get into some decent business again. Whenever a corporation makes a proposition to any set of men, they invariably suppose you are going to cheat them, and that there is something terrible back of it. Four or five, however, of those of whom I speak saw the merits of the proposition, and within a day or two accepted it. Some of the largest, I believe the two largest, shippers of coal accepted in a day or two—the Philadelphia Coal Company and AGARD, MOODIE & Co., but the rest did not, and they sent me the protest which has been offered in evidence, and which was very thankfully received and very politely answered. Out of this has sprung all this trouble; out of this have sprung all these anonymous newspaper articles, these complaints of this "grasping monopoly," simply because we said to those who produce the coal, and who have been paying forty cents for selling it, that we would do the business for ten cents a ton; and every man of them who was called here (and our friends committed the inadvertence of calling three or four of them) justified us, and said it was one of the best things that ever happened to them. In all this thing, my friend, Mr. BORDA, has been the leading spirit. He it was who subscribed the largest sum in aid of this investigation—$500, I think, was the amount—when our poor retailers only could put in fifty or one hundred dollars apiece. It was Mr. BORDA, I think, who furnished a great deal of the law that led to this investigation until our friends now here were employed, and then I am very glad to see that some of the crude notions which we heard through newspapers as adopted under Mr. BORDA's advice, were abandoned. Wherever we saw a complaint against us we could trace it to Mr. BORDA. An article appeared in the Boston *Post*, under the head of "A Citizen," in which, as the representative of native-born Americanism, there was a protest against the demoralizing influence of British gold! Well, the native-born citizen was Mr. BORDA from France. In another paper there appeared an "interview" with one of the "hard-fisted and horny-handed sons of toil," who had devoted the morning and the noon of his life to working in the coal mines and earning his daily bread, and the "hard-fisted and horny-handed son of toil" was the aristocratic Mr. BORDA, who is "robed in purple and fine linen, and who fares sumptuously every day." If an article appeared signed by "A Coal Operator," that is, a man owning a coal mine, who was being ruined by the operation of this great monopoly, and we came to investigate and asked the editor who this coal operator was, it invariably turned out to be Mr. BORDA, who had sold his last colliery to the company, and who was jingling the money he received for it in his pocket just before he had taken the pen to write of himself as "a coal operator." So, occasionally, although we have enough retail dealers to fight against, I think a great deal of the complaint of the retailers came from Mr. BORDA, whose business is that of a wholesale dealer and factor, which has been uninterrupted by the advent into business of this company, and who now, I suppose, is remaining at home engaged in shipping a large amount of coal and making a large amount of money by the use of one of the wharves of the Reading Railroad Company, which we give to him for nothing.

Mr. BORDA is a gentleman of very great ability, a gentleman of French birth, one of whose ancestors, I think, either in the direct or collateral line, was a very scientific man in the latter part of the last century, and an admiral who had many a fierce battle with the English. I suppose, therefore, that in Mr. BORDA's breast there is a lingering hereditary animosity against the Englishman; and as we are about to celebrate our centennial anniversary, and ask our English cousins to come over and forgive us for having fought with them a hundred years ago, I think Mr. BORDA ought to wait until that ceremony of reconciliation is over before he lets the natural prejudices of his race excite him to attack the "British people;" but whenever my friend hears of an Englishman (I think the usual designation is "a bloated English bondholder") he exclaims, like the giant in "Jack-the-Giant-Killer":

"Fee, fi, fo, fum.
I smell the blood of an Englishman,
Dead or alive, I will have some,"

and he draws his sword and prepares him for the fray.

I sympathize with Mr. BORDA; he comes of gallant ancestry, and he belongs to a gallant race, who have doubtless been frequently oppressed and injured by the English, and I could almost forgive him for any attack he might lead against the hereditary enemies of his country; but I do sympathize with him from the bottom of my heart in the disappointment that he will find awaiting him after he has captured the three Englishmen who own so large an interest in the Reading Railroad Company, and discovers when, alas, it may be too late, that two of them are Irishmen and the third is a very broad Scotchman. I do hope that Mr. BORDA will let them alone, because I know that, with the natural politeness of his race, when he discovers his mistake he will make an apology which will be almost as embarrassing as the original offense.

Mr. BORDA has always shown a disposition to manage our business, for which we are extremely grateful to him; and, really, I do not know anybody who has the experience, the urbanity of manner, and the knowledge of the coal trade that Mr. BORDA has, to enable him to take hold of it and relieve us of the task! Some years ago, when I was a young man, and I suppose these gentlemen thought they had a very good opportunity to teach me something, Mr. BORDA and three others (one of whom was Dr. ROMMEL and another, Mr. VANDUSEN), wrote me a letter, the gist of which was that they had looked on the vast busi-

ness of the Reading Railroad Company, and they thought a very good plan for the company to manage its affairs would be to reduce its dividends to a fixed limit, and divide the residuary profits by giving half to the factors and half to the stockholders! It was a very ingenious suggestion. Their idea was that they would work so much harder then to get money; they were getting forty cents a ton out of it, but if, besides, they got half the profits over and above eight per cent., there would be nothing like the way in which they would work. The matter was considered by the managers of the company, and on the 6th of March, 1871, I wrote a short letter to those gentlemen which I will take the liberty to read, and which runs as follows:

"I owe you an apology for the delay in making a formal reply to your communication of January 31st, although shortly after its receipt I intimated to two of your number what the answer would be. Your letter was duly laid before the managers, by whom I was unanimously directed to reply to you that the company would decline to consider the subject presented by your communication. I trust you will not consider me impertinent or intrusive if I suggest that the usual manner by which people qualify themselves to receive a share of the profits of a corporation is to become owners of its stock; and I need not add that it would give great pleasure to all the present officers of this company if the gentlemen connected with the coal trade would, by the purchase of stock, give to themselves a right, not only to share in the distribution of the profits, but to participate in the management of the company."

I can make no better answer to Mr. BORDA now than this. If he, and these other gentlemen, will take a moiety or a tenth part of their wealth and invest it in the stock of the company, we shall admit them into a participation, not only in its profits, but in its management; and I shall be very glad, indeed, to hand over the burden which I have had on my shoulders for the last six years to a gentleman so well able to bear it as Mr. BORDA. Indeed, I am at a loss to conceive why he should complain of his present position, for I am sure from what I have seen of him that if he will devote one-tenth of the time, and one-tenth of the ingenuity and one-tenth of the ability that he has devoted to our business, to the management of his own, he will be one of the most successful merchants that ever came to this country. He, as I said, is the leading spirit; he is the representative of his class. He, of course, has not appeared upon the scene except as a modest, unassuming witness, brought before you by the command of a subpœna; but he is "the power behind the throne;" he is the man who pulls the wires, and who has moved the puppets. He has led on this investigation and incited it, using the names of others, no matter what became of them; and no matter that our poor friends, HANCOCK and SPOONER, will have to wear gloves for all the rest of their natural lives to hide the manner in which their fingers have been burnt by pulling Mr. BORDA's chestnuts out of the fire.

So much, gentlemen, for the factors. I dismiss them to the retirement in which they belong and which they can enjoy, for they carry with them an abundance of this world's wealth; and I now come down to our friends, the retail coal dealers. I have shown you, I think, how our business affected the factors, and I desire now to show you how it has affected the retail dealers. How has the retail coal business been conducted in Philadelphia? I beg my friends who are opposed to me, and who are sitting around me here, not to think that I am unnecessarily invidious in speaking of them; but I must speak of them, and I must compare them with others; and I say that the retail coal business was conducted in Philadelphia in a manner in which it was not conducted in any other city. Any man could go into the retail coal business in Philadelphia who could get an endorser to guarantee the payment of a week's tolls. He could put up a little yard and order his coal; the Reading Railroad Company gave him a week's credit, and at the end of the week five days more before he paid his bill. Almost all men who had no other means of earning money, because other means required capital, would go into the retail coal business. True, a great many good men are in this business; a great many very good and enterprising men, whose business has been ruined by the very class to which I refer. I know that when I was in Schuylkill County every man who broke down in mining coal started a feed store, and when I came down to Philadelphia I found that every man who broke up in any other business opened a retail coal yard. The result was that this business was divided among so many that they could not live without a large profit. The large price at which they sold coal in Philadelphia induced corporations, whose main business was in New York, to divert some of their tonnage to Philadelphia, and for many years the Lehigh Coal and Navigation Company has been retailing coal in Philadelphia, bringing it forty or fifty miles further than we do, and selling it at a price less than the retail coal dealers; and we found that we were losing the business of the Reading Railroad Company on account of the high price at which coal was retailed in the city of Philadelphia. We therefore commenced the retail coal business ourselves, and we had two objects. The first object was to add to our facilities for holding coal. You can see yourselves the great bulk of the coal production—how much goes to market, and how important it is to have a place to put it. Richmond is filled up by a week's business. The yards we opened in Philadelphia hold 130,000 or 140,000 tons. It is quite a valuable thing to have such depots to which we can send the coal when there are no orders. The coal must leave the mines every day, and the more places we have to hold it, during a depressed condition of affairs, the longer the mines can keep in operation. Another reason was that we wanted cheap fuel in the city of Philadelphia. The city of Philadelphia is peculiarly a city of manufacturers and it is a city of cheap homes. When I tell you that coal is retailed and has been retailed in the city of New York and sometimes in the city of Boston as low as in the city of Philadelphia, you will be astonished, until I show you the reason for it.

Now let me take our business as retailers. Suppose we are selling 25,000 tons of coal a month (and we have sometimes sold more than that) at retail. When we sell 25,000 tons of coal a month, our rent account and the interest on the property invested in the coal yards does not amount to more than twelve cents a ton. The salaries of all the people employed, clerks and telegraph operators, and every man who is paid by salary, do not amount to more than eight cents a ton. The pay of the men who are paid days' wages in the yards amount to just fourteen cents a ton; and then, if we allow for advertising, repairs, miscellaneous expenses, and losses, six cents a ton, we have this result:—That with a business of 25,000 tons of coal a month, we can afford to sell coal at retail at only forty cents more than the wholesale price added to the freights. But now let me pick out one of the gentlemen who was driven out of business, as he says, by the advent of the Coal and Iron Company. I mean Mr. BOGGS. He swore that we drove him out of business. Let us see what kind of a business he did. He told you that he sold sixteen hundred tons of coal a year. He paid $600 a year for rent. His rent account alone was thirty-seven and a half cents a ton on every ton he sold. What were his salaries, or, what represents them—his cost of living? He is a very gentlemanly-looking man, and he has a family. How much does it cost such a man to live? At the lowest $1600 a year. That is a dollar a ton on every ton against eight cents for us. He employed but one man. If he only paid that man $40 a month, his wages were thirty cents on every ton sold. He put up $1600 or $1700 worth of permanent improvements. Allowing ten per cent. for depreciation and six per cent. for interest, you have twenty cents more in these items. The aggregate of all in the case of the man who was driven out of business is $1 87 a ton against forty cents on our part. Why, he ought to be driven out of business. Why should the people of Philadelphia pay $1 47 per ton more for coal than they can get it for from us, for the sake of keeping in business a man who sells only 1600 tons a year? Coal is a common article; it is not high priced; you do not want to rub it with sand paper and put it up in gold leaf. The cheaper the people can get it the better for them and the better for us.

But look at another fact to see how much each retailer sells. In 1873, there were two hundred and seventy retail coal dealers in Philadelphia; in 1874, there were two hundred and thirty-nine. A million tons a year is a fair estimate of the amount retailed, of which we sell two hundred thousand tons, leaving eight hundred thousand tons of coal to be sold by from two hundred and seventy to two hundred and thirty-nine men. The average is only about three thousand five hundred tons for each one of them to sell. Every fair retail dealer must get, I suppose, $3,500 a year for the expenses of himself and family, &c. Some of these gentlemen look as if they were very considerable men, well endowed with this world's goods. They must get at least one dollar a ton as profit over and above the necessary yard expenses. Suppose a miner of coal were to open a yard in Philadelphia and sell his coal at retail at the same price as at wholesale, would you investigate him? He would injure these retail dealers just as much as we do. Suppose any of the men who mine one hundred thousand tons of coal per annum, instead of trusting their coal all over the United States, should say "we will open a large yard in Philadelphia and sell our coal there; we will have an agent to look after it; we will sell at the wholesale price, adding freights, and get our money as the coal is sold." That would be a benefit to the city of Philadelphia, but it would injure the other retailers; and if, thereupon, the latter were to go to the Legislature, would that body appoint a committee to investigate the individual coal operator? But our friends, the retail dealers, go to the Legislature and ask you to investigate us, because we sell coal a dollar a ton cheaper than they do—and they tell us we ought to be punished for that! But they say that it is not what we have already done, but what we intend to do, that they complain of. The only answer to that is, "wait until we strike the blow before you complain of us." We never will strike it, for this reason: we want to get that which (to use the horrible word) *is a monopoly*; we want to get a monopoly of the coal carrying trade to the city of Philadelphia, and the only way we can do it is by selling the coal there so cheap that the Wyoming and Lehigh regions cannot get any business. That is the protection the community has. We are ninety-three miles off; the other regions are from one hundred and ten to one hundred and sixty miles; and yet at the prices established by the retail coal dealers, the Lehigh and the Wyoming coal comes into Philadelphia from an increased tance and undersells our Schuylkill coal.

But I am frequently asked this question:—"Why do you interfere with these people? Why does your large company bother itself about the profits of these small retail dealers? Why do you not let them have their business?" The answer is, simply because we want to increase the carrying trade of our railway; and if they will sell coal as cheap as we can, we will not sell a ton. If the Retail Coal Dealers' Association will come to us and say that they will take our yards from us and bring their customers to them and sell coal at the same price that we do, we will give them the yards and supply them with coal, and we will not ask them to pay for it until they sell it, if they will give us security that they will not run away with the money. That is all we want.

If Mr. ELLIS BRANSON will take the yard on Ninth Street, and Mr. DAVID BRANSON will take the yard on Fairmount Avenue, and bring all their customers to us, we will give them the yards to-morrow if they will guarantee to sell our coal at the price we do. Let them do it, and they will make as much money in a year as they do now, because instead of selling seven thousand tons, they will sell seventy thousand tons, and at ten cents a ton profit on the large amount the result to them would be the same as one dollar per ton on the smaller, while the benefit to the citizens of Philadelphia would be incalculable.

I admit that these gentlemen have been injured by us, but it is in law, *damnum absque injuria*. It is a loss for which they have no remedy. My friend, Mr. LANE, says that a man's business is his own, and when you deprive him of his business, you take away that which is his property. When this investigation was commenced I was told—but I believe our friends had not then retained counsel—that that was the legal and constitutional provision which we had violated; that, under the doctrine of vested rights a man who had built up a business was entitled to it, and could not be interfered with. That is to say, the storekeeper who for twenty-five years had had a business from which he was making $10,000 a year by selling silk at a dollar and-a-half a yard, and sugar at twenty cents a pound, could not be interfered with by anybody who should come beside him and offer to sell silk at a dollar and sugar at ten cents. I do not think that such is the law or the constitution.

The stage-coach men were injured in the same manner; and a most estimable class of citizens they were in their day. Nothing would be more delightful, even now, than to get on a stage-coach and go to Pittsburgh at the rate of five or six miles an hour, changing horses every three or four hours, taking a week to get there, and enjoying the beauty of the scenery! See how this estimable and worthy class of citizens have been injured by the frightful monopoly of the Pennsylvania Railroad Company! Have they not something to complain of? In my young days, which were not very long ago, I used to travel upon the canal boats on the Susquehanna, before the Northern Central Railroad was built, and I assure you that a more delightful way of traveling than that was never invented by the most luxurious monarch of the East; but it is all gone; the Northern Central Railroad has driven it away. The canal boats are rotting upon the banks of the stream, and what the poor canal boat captains have turned their attention to I do not know, but they certainly have joined that large army of martyrs which has had its ranks increased by the accession of Mr. BRANSON and Mr. BORDA. They are injured, but they have no right to complain. The benefit is to the public; the benefit is to the producer, and though they are injured, it is an injury for which the law gives them no redress.

Now, how might they avail themselves of the changed condition of affairs? There are two ways. In the city of New York, the Delaware and Hudson Canal Company, the Delaware, Lackawanna and Western Railroad Company, and especially the Pennsylvania Coal Company, have been retailing coal for years and years, and they retail coal in the city of New York at a price just as much over the wholesale rate as is necessary to pay the very small yard expenses they incur. Have they driven out the individual retailers in the city of New York? No; the greatest opponents they have are individual retailers. There is one firm of retailers in the city of New York which sells 100,000 tons of coal a year

That is the way to compete with corporations. Let Messrs. BRANSON & Co. go away from the little contracted yard at Eighth and Willow Streets, take a square of ground, and make arrangements with some miner in Schuylkill County to put in 80,000 or 100,000 tons, and sell as low as we do, and they will drive us out of the business. We do not want to be bothered about this retail coal business; we have enough to do; but we want to do something which will give increased tonnage to the Reading Railroad, and if I can bring about a state of circumstances which will make coal cheap in the city of Philadelphia, the producing region which is nearest will get a monopoly of the traffic. There are several retail dealers in Boston who sell from 50,000 to 100,000 tons of coal a year. That is what it must come to in Philadelphia. We shall never get a monopoly of the retail business in Philadelphia. People do not like to deal with a corporation if they can deal with an individual. There is a natural prejudice against corporations that you cannot obliterate. But the retail coal dealers of Philadelphia will divide themselves into three classes, the first two of which will be the wise ones, and the other will be the foolish ones. Of the first two classes, one that has the capital and the energy, will open large yards and sell as much as we do, and invite carters and everybody else to go to them, and give them the coal at thirty or forty cents a ton over the wholesale price. Another class will give up their yards, retain their carts, office and their customers, come to our yards and get coal, and supply their customers. It is the kind of business we want. If we can give the retailers in the yard coal at twenty-five cents a ton more than wholesale price, they will get it loaded into their cart cheaper than they can if they have their own yard, and have to pay a rent equal to fifty cents a ton. The third class will vanish from the scene. They will join the canal-boat captains and stage-coach drivers, and emigrate to that illusionary and illimitable land which, in the geographical nomenclature of the politician, is known as Salt River.

I have now gone through the preliminary stages of this case, and brought ourselves to the time at which this investigation was ordered. I do not believe that the Legislature of Pennsylvania would have ordered the investigation upon the complaint of the retail coal dealers, or even upon that of Mr. BORDA, if it had not been that a conjunction of circumstances, which enabled these gentlemen to unite their forces with the anti-monopoly convention, representing the trades unions, then sitting at Harrisburg, led to a complaint before you, that "roared so loud and thundered in the index," that you thought it would be your duty to order this investigation.

Now, let us look at the resolution of investigation. The preamble is—

"WHEREAS, the Philadelphia and Reading Railroad Company, who are the ostensible stockholders of the Philadelphia and Reading Coal and Iron Company, are mining and selling coal in direct violation of their chartered rights. * * * *

"AND WHEREAS, The complaint is of grave importance and warrants a careful investigation by this body, to determine whether the said Philadelphia and Reading Railroad Company or the Philadelphia and Reading Coal and Iron Company have in any manner exceeded the rights and privileges granted to them by their charter."

Therefore, the committee of investigation was ordered to ascertain whether the companies "have in any manner exceeded the rights and privileges granted by their charter" You will bear me out in saying that when my friend Mr. PETTIT opened the case, he made no allegation of unconstitutionality, except this, that he referred to the provision in the new constitution, which prevents any succeeding corporation doing what we have done, and he simply referred to that to show that what we did was now against the policy of the law; and he then referred to the Act of 1869, to show that it was especially against the policy of the law in Schuylkill County—but there was then no allegation of unconstitutionality whatever. Under the new constitution, I grant you, we could not have obtained the rights which we now have; but the new constitution contains a saving clause which declares that no rights already vested in a corporation shall be affected by the instrument, and under that we stand just where we did before the constitution was adopted. Gentlemen, I was a member of the recent Constitutional Convention. I did, to the utmost, oppose and denounce the railroad article in that constitution. I said that it was an iniquity. I said that the Pennsylvania Railroad Company already had all the rights they ever would want, and that it was an iniquity to prevent other corporations that might come after from having the same rights; and I think I used this language—that the Reading Railroad Company and the Pennsylvania Railroad Company could afford to pay $10,000,000 for the adoption of a constitution which would protect their powers, and prevent any opposition being gotten up against them. But I was laughed at; and because it was so apparent to me that by very many of my respected friends in that convention, I was considered an emissary of railroads, I thought it was better for me to retire from the body altogether. But I think the succeeding history of this State will convince the people that there never was a more iniquitous provision than that which gave to us, and protected us in the possession of, powers that never can be taken away, and yet prohibited you from giving to any rival line any rights such as we possess.

I say this simply to vindicate the position I took in the Constitutional Convention, not as the representative of a corporation, for I acted against the interests of the corporation with which I am connected, but as a representative of the people, claiming the right for every man to have the same power that we have, and thus to obliterate the distinction between individuals and corporations.

During this whole investigation we heard no charge whatever of unconstitutionality; and now I think that if our friends had been successful in gathering the wool they went out for, and had not come home shorn, we should have heard very little talk about the unconstitutionality of our charter at the conclusion of this argument. But, like a wise general who orders up a reserve to cover his retreat, on the last day of the examination we had a witness who, out of these nine hundred pages of testimony, occupies only ten or twenty; and upon his testimony we are charged with unconstitutionality, and we hear very little more about short weights or car detentions.

But the only allegation of unconstitutionality that we hear to-day is, that the charter of the coal and iron company, so far as it contains within itself the power to the Reading Railroad Company to subscribe for its stock, is unconstitutional, because it violates that provision of the new constitution which is exactly the same as the amendment of 1857, viz.:—"That no bill shall be passed containing more than one subject, which shall be plainly expressed in its title." I am not going to argue that question, because it has been abundantly decided. It has been decided that the words "an act to incorporate" a certain company are all that are necessary in a title to enable the act to confer any powers whatever upon such company; and one of the powers granted to the coal and iron company was the right to sell its stock to other corporations. My friend, Mr. LANE, drew a distinction at law between powers granted *to the* corporation, namely, the coal and iron company, and powers granted to any other corporation, namely, the railroad company. The words are these: that it shall be lawful "for any railroad or mining company existing under the laws of this State to subscribe for or purchase the stock, or to purchase or guarantee the bonds of the company hereby incorporated." Mr. LANE says that is another subject, because it gives power to another company. He says all the powers given to the coal and iron company are right enough, namely, the power to purchase bonds, the power to purchase stock, the power to own lands, the power to purchase stock of other corporations, the power to own coal mines, the power to mine and sell coal. Those, he says, are all right, because they are given to *the corporation* named in the title; but in every one of these instances does not the power of the coal and iron company to do something necessarily imply that the person with whom they are to do it is to have the power to deal with them? The charter declares that the coal and iron company shall have the power to buy the coal lands of any corporation. Would this power have been rendered void by adding the words "and any other corporation shall have power to sell its lands to them?" These words are words of supererogation. If the act had simply said "the coal and iron company shall have the power to sell its stock to any other railroad company," it would have been all that was necessary, and that would have been a direct grant of power to the corporation. But it went further, and after having given power to the coal and iron company to sell its stock and bonds to another company, it went on to say that that other company should have the power to purchase such stocks and bonds. We are told that this is void. If that argument is sound, if the premises of my friend are correct, what is the conclusion? That, if after every one of the grants of power to the Coal and Iron Company the words had been added "and any other person shall have the power to sell them its lands, and any laborer shall have the power to contract with them for his labor, and any other company shall have the power to sell them its iron mines, and any other company shall have the power to guarantee their bonds," said words would have rendered void the very grant of power to the company incorporated by the act which is now the subject of controversy.

I can only say that the law has been expressly decided otherwise. I did not expect this point to be made, and did not prepare myself to meet it here, but I telegraphed to Philadelphia yesterday for authorities, and I can refer you to a few in Pennsylvania, which are conclusive of the question.

One of the leading cases upon this subject was decided some years ago; I argued the case myself in the Supreme Court. A *quo warranto* had been issued to test the right of a judge in Schuylkill County to hold office under an Act of Assembly, which was entitled "An act to establish criminal courts in Dauphin, Lebanon and Schuylkill Counties," in which act there were not only provisions about the courts, but a declaration that certain officers, the clerks of other courts, should cease, and new officers should be elected. It was claimed that such grants were in violation of the amendment of 1857, which is in the same words as the clause of the new constitution. The case was heard in the Supreme Court, and in 8, P. F. SMITH'S Reports, page 226, it was held by Judge SHARSWOOD that the title to the act "to create criminal courts" was sufficient to comply with the provisions of the amendment to the constitution.

In re Church Street (4 P. F. SMITH, page 353) is a case still stronger, because an original act was passed entitled "an act to straighten and widen certain streets," in which nothing whatever was said about damages or about the manner in which damages should be assessed or about actions for damages, and some years afterward the Legislature passed a supplement, which was simply called a supplement to an act entitled so and so, going over the original title, and in that supplement there was a grant of power upon a subject not mentioned even in the body of the original act; and the courts held that the title was sufficient to put people on their guard, and anything incident to the subject of the title must be held to be covered by it, and it has been so held in nearly all the States which have similar constitutional provisions.

There is a very strong case on this point in 3d P. F. SMITH, page 390, *Blood vs. Mercelliot.* An act of Assembly was passed entitled "an act to increase the boundaries of Forest County." If there was anything in this constitutional provision that required an act to conform to its title it necessarily would be implied that no power but that of increasing the boundaries of the county could be granted under that title; but the act of Assembly contained a proviso that commissioners might change the county-seat and take title to lands for the purpose of building new county buildings, and the Supreme Court held that the title was sufficient to cover all the powers given by the act.

There is a late case reported in the Philadelphia *Legal Intelligencer* of January 16, 1875, *Lyons vs. State Line and Juniata Railroad Company.* There an original act of Assembly had been passed, entitled an act to incorporate a company, and years afterward, a supplement was passed, which was simply entitled a supplement to an act to incorporate the said company, and under that supplement, powers were given the company entirely different from those contained in the original act. The position held by the court was exactly the position that has been taken by the courts of Kentucky, of almost every other State in which this constitutional provision exists, to wit:—That wherever there is an act of Assembly entitled an act to create a certain corporation, such words in the title are sufficient to enable the Legislature to vest in the particular corporation any power whatever. The power vested in us by the act of incorporation now objected to, is the power to sell our stocks and bonds to other companies. I submit, with great confidence, that the fact that words of surplusage are used to give to these other companies the powers which they necessarily would have had by implication does not vitiate the act, and therefore every allegation of unconstitutionality falls to the ground.

SENATOR RUTAN.—If that strict construction was to be held four-fifths of the legislation since the adoption of that amendment would be void.

MR. GOWEN.—Certainly. In the case of *Lyons vs. State Line and Juniata Railroad Company*, the court refers a calculation of the number of corporations in Pennsylvania chartered since the passage of the amendment of 1857 which would be destroyed by any stricter construction, and they put it at 1400. The judge who delivered the opinion so states, and it has been well said that if the stricter construction were adopted, the title to an act would be as long as the act itself, and would be simply a repetition of what was to be contained in the enacting clauses.

When we are called upon to construe a statute or a new constitution we look into the old law; we look into the mischief, and we look into the remedy proposed. The old law was this:—That under a title "to enable ROBIN HOOD to build a barn," you could create a railway company to own all the railways in the State of Pennsylvania. The object was to prevent people being deceived; to prevent what is called snaking a bill through the Legislature. Wherever you have a title which describes the corporation to be created nobody is deceived, because when persons hear that the corporation is to be created they can look and see what its powers are. But if every power and every grant given to a corporation has to be specifically named in the title of the act of in-

corporation it necessarily follows that the title would have to be as long as the act itself.

SENATOR HERR.—Is there not a case in 5th P. F. SMITH about the camp-meeting ground which settles the point?

MR. GOWEN.—Yes: I recall that case, and as I have a short brief containing the authorities upon this point, I will hand it to the committee for their use.

I now come down to the charges against us, which I propose to examine in detail. Leaving out the question of unconstitutionality on account of the title of the act, these charges against us are:—

1st. Of detention to cars.

2d. Of short weights.

3d. Of an unfair distribution of cars; and

4th. Of a combination or conspiracy to control production, which renders us amenable to the law, and which shows us to have been guilty of an abuse of our corporate franchises.

First, as to the question of car detention. You, gentlemen, have had a very full insight into the business of the Reading Railroad Company. You know that the great object sought to be accomplished by that company is to do as large a business as possible; we carried last week 201,000 tons of coal; we carried the day before yesterday 33,000 tons of coal; we carried yesterday 37,000 tons of coal; we have 22,000 coal cars. Of these 22,000 cars say there are nearly always five per cent. out of service at the different repair shops. They may only stop for a day, but those that stop for a day count one, and those that stop five days count longer. It may be said safely that there are five per cent. withdrawn for the purpose of repair. Then another five per cent. may be standing idle here and there. You cannot make the company work like an automatic machine. It is safe to say that there are ten per cent. out of service. That would leave us twenty thousand to carry two hundred thousand tons of coal per week. With twenty thousand cars, it is absolutely necessary that every car should average two trips a week, as each car will hold five tons, and one trip of the whole twenty thousand would make one hundred thousand tons. The object sought to be accomplished by the Reading Railroad Company is to make these cars average two trips every week, and, if possible, two and a quarter. If we can make them average two and a quarter, we can carry two hundred and twenty-five thousand tons of coal per week. Now, to suppose that for the sake of gratifying a little malice against the retail coal dealers, who are our own customers, we would let a car be detained on the road and block up our business to prevent the consignee getting five tons of coal, is so ridiculous that the very smallness of the complaint should entitle it to comtempt. To detain a car seven days means to lose seven trips by it; means to lose the carriage of thirty-five tons of coal, which, at two dollars per ton, would be seventy dollars; to throw away seventy dollars out of our receipts for the purpose of making ten cents a ton on five tons that we may be able to retail, is to suppose that for the purpose of gaining fifty cents we would throw away seventy dollars! We do not stop our profits at the spigot and let them run out at the bunghole in that way. Let me tell you what will cause detention. An accident causes detention for the greatest length of time. If the accident to a car is such as to require it to be unloaded, then the detention is but for a few days, because the coal is taken out and put into another car and sent down the line, but it necessarily involves the detention of a day or two, because the accident may happen at a place where there is no empty car. You cannot stop a through train of cars and take an empty one out of it, because the through trains are manifested, to the end of the line. You must take the broken car to some place where an empty car is standing. But if the accident to the car is not such as to involve a complete repair, the coal is left in till the car is repaired. The body of the car may be safe, but a wheel may be broken, an axel may be injured, or a box may be hot. All that can be repaired with the coal in the car; and it is left in until the car is repaired, which may take two or three weeks. You have seen the repair-shop of the company with fifteen or twenty sidings leading into it. If, when the car comes to a siding, that siding is empty, the car gets into the shop at once; but if it comes there when there are fifty cars upon the siding, it must wait until the other fifty are repaired. It may take a month to do this. The consignee does not get his coal the next day, but he can telegraph for another car load. We cannot select for repair the broken cars that are in the shop containing coal. It is cheaper for the consignee to duplicate his order by telegraph when his coal does not arrive, and get another carload to take the place of the one which is delayed.

A great many cases of detention occur from lost consignments; a manifest may be lost; one car may be sent to a particular dealer, and it may be the only one; there is a special ticket for it; the conductor of the train has all these tickets, and he may lose one of them.

We have an agent who is called the missing coal agent, and you would be astonished at the amount of the business that passes through his hands. A car comes down and the conductor loses the ticket and the name of the consignee. What shall be done with the coal? It is sold instantly to somebody at any price; the car must be gotten off the road. It may take a week or two weeks to find out who sent the coal, and to whom it was consigned. The moment it is found the consignee is paid for the coal, not at the price for which it sold, but at its real market value. We must sell it to get rid of it. We cannot let it remain on the road. One car would block up the whole road, and I believe the problem of passing two trains on a single track has never yet been satisfactorily solved; and when one car is on the track it blocks the whole trade.

Let me call your attention to the small number of these complaints. In the two years of 1873 and 1874, we carried 2,759,073 cars, and the total number of cars complained of, giving to the complainants the benefit of every one, is only 790 cars, that is 3-100ths part of one per cent., and when you take out of those 790 the 140 that were detained less than five days, you have only 650 cars detained over five days, or about the 25-1000ths part of one per cent. of the entire traffic. Was there ever a corporation that showed such a clear record? With every retailer up in arms against us, every one injured in his business by our action, with the factors joining forces, and the Labor Reformers connected with them, with the process of the Commonwealth in their hands to enter every man's house and subject the owner to an inquisitorial examination of their business—many of them glad and eager to testify if they could—out of the whole you have got the 25-1000ths part of one per cent. of the business done that was not delivered within five days. My friend, Mr. LANE, read off from the statements we had furnished him the number of cars of coal detained from individuals for from five to thirty-three days, which, roughly, altogether amounts to 550 at the utmost; but he said nothing about the two yards of the Coal and Iron Company, and since his speech of yesterday, I have had the statements of the Coal and Iron Company's yards examined, and in the yard at Ninth and Girard Avenue, which has only been in operation a short time, 423 cars were detained over five days, and in the yard at Ninth and Berks Streets, 1076 cars were detained from five to twenty days. So that in the two yards of the Coal and Iron Company, whom we are charged with having favored, the amount of cars detained over five days is nearly three times the aggregate of those detained for all the retail dealers put together. Where can there be a clearer record than this? What better evidence can you have of the truth of the statement that was made to you upon oath, that whenever the officers of this company discriminated in any respect, the discrimination was against the Coal and Iron Company and in favor of individuals?

I knew very well that when we entered into the business of retailing coal and became the rivals of the coal dealers that a clamor would be raised against us, and I was particular to make it my duty to give express orders to everybody who had any of the business in his charge, the more especially as I was absent a greater portion of the two years, to see that in no case whatever should any discrimination be made in favor of the Coal and Iron Company. True, the Coal and Iron Company often had coal in its yards. The company's yards would hold 130,000 tons, and another man's yard would hold twenty or thirty cars, so that we might go without cars for a month and have coal in our yards all the time.

I come now to a subject which I do not know whether I ought to touch upon, and that is the subject of short weight. I think our friends have heard a good deal about this lately, and may, perhaps, be tired of it; and yet it is the charge made against us, which, from its very littleness and meanness, makes me more anxious to remove from your minds and the minds of the public any impression that we have descended so low as to be guilty of giving false weight. Do you believe that all the energies of the company have been devoted to making money by robbing the community of retailers of twenty-one tons of coal, the net value of which, at two dollars a ton, was forty-two dollars? Why, gentlemen, when I tell you that if we added one cent per ton to the transportation charges of the Reading Railroad, it amounts to the sum of $60,000, you can see that if we want money from the public we can take it boldly and put an additional cent on our tolls. A cent will give us $60,000, and a half cent will give us $30,000, a tenth of a cent will give us $6000, and the one-hundredth part of a cent per ton will give us $600, or fifteen times as much as we are charged with stealing by giving the retailers short weight! Why, if we want to steal, we will take a pistol and go to the highway, and do it boldly and in a manly manner. "A false balance is abomination unto the Lord, but a just weight is His delight," and we are not going to render ourselves amenable to any law, either of God or man, for the sake of getting a paltry forty dollars in two years. We have shown you the correctness of our scales; we have shown the care taken with them; whether we weigh when the car is passing along slowly, or whether it is stopped, it is a matter of no moment, for the reason that whether a car is moving or standing still it weighs exactly the same—there is no difference whatever. A car moving slowly over a scale will weigh on every part of that scale to the very ounce exactly the same as it will weigh if it is standing still. Indeed, the protection of the public is to have it weighed when it is moving, for the reason that in order to stop it the brakesman has to hang upon the brake, and in the hurry of business it may happen that we weigh the brakesman along with the coal, and the people who buy coal do not want to buy brakesmen by the ton. But if it moves slowly there is no other weight than that of the coal. One of our friends objected that on one occasion we weighed the hind legs of a mule for him. Well, gentlemen, if the hind legs of the mule were on the scale the hind legs of the car were off it, and I, as the consignee, would rather pay for the coal by the weight of the mule than by the weight of the car.

What, then, are the causes of short weight? In the smaller sizes of coal the cause is leakage. The boards of the car may warp; there may be a knot-hole; the doors of the car which should be drawn up by the man who loads the car may not be closed, or in drawing them close and believing he has got them tight, he may be mistaken, and a little piece of coal may be between the lids of the doors and prevent them closing. The man shuts them with a lever or a wrench, working on the outside of the car; he winds up the doors and a piece of coal may be between them. If that car is loaded with chestnut coal or pea coal, or sometimes small stove coal, a great deal will leak out before it reaches Philadelphia.

Accidents are a great cause of short weight, not an accident that results in destroying the car, but a simple collision which throws the coals off. I have seen cars coming down the road in which the coal was thrown forward against the car, so that it had evidently run over the front end, whereas at the rear end it was a foot from the top. If an engineer coming down the line sees an obstruction in the road, the shutting off of steam and throwing the weight of the engine against the train, the mere attempt to stop the cars, even when going only at the rate of ten or twelve miles an hour, will throw small coal forward and throw it off. In addition to this, there is a great deal of stealing. I do not know how many hundred of the industrious population of Philadelphia live off the Reading Railroad Company by stealing coal. We cannot, in all cases, prevent it. I have myself seen women sitting on a bank beneath which the railroad passed, armed with long rakes, as if they were coming from the harvest field, and as the cars passed they raked the coal off by bushels, and when the cars were gone, sent their children down to gather the spoils. I have seen men jump on the cars and kick off coal with their heels to be gathered up for the winter's fuel. It is a little business; it seems hard even to prosecute these poor people for doing it, but we are obliged to do so, in order to stop the offense. The property is not ours; it is in our custody, and we have to do all we can to prevent stealing. The records of the courts in Philadelphia, Harrisburg, Reading and Pottsville will show the number of prosecutions we have brought for no other purpose than to stop this pilfering of property committed to our care. But we have, as you have heard, an inspector who inspects all coal as it reaches its terminus, and if there is any evidence of short weight we allow it to the consignee without the parties asking for it. It is allowed them, entered upon a book, and the amount paid to them. The charges of short weight (I think there were eight or ten of them made by some of the retail coal dealers,) were made after they had dumped the coal. They made the allegation themselves, without any inspection of ours, without any person representing us being present, and in such cases we refused to pay, although in one or two instances I believe the matter was adjusted. But you will bear me out that in every instance where any complaint was made before the car was dumped the matter was investigated, and if the allegation was found to be correct allowance was made for it.

I need not again refer you to the smallness of this charge; but I want to call your attention to one thing which was commented upon by my friend Mr. LANE, to show the manner in which the scales at the mines were used. He alleged that the fact of there being a discrepancy between the scales at the upper end of the line and those at the lower was an evidence that our scales were wrong. We are never given credit for any good action. Even our very virtues are held to be crimes, and the liberality with which we weigh coal at the mines is made use of as an evidence of our rascality. When we were in the

habit of allowing five per cent. for waste, the instructions were to weigh accurately, and the five per cent. was the allowance for waste. When the five per cent. was taken off, the instructions were to weigh liberally, the object being to make at the scales a sufficient allowance to cover ordinary waste. We weigh liberally at the upper scales in every instance. At Richmond, out of four millions three hundred and fifteen thousand tons, there is a gain of one hundred thousand tons, and our friends say that that shows that one of the scales is not right. It shows no such thing. It simply shows that in weighing the coal as it leaves the mines we weigh with sufficient liberality to allow for the waste of the dirt. So in our own retail yards, out of one hundred and eighty-five thousand tons received, there was an excess of one thousand six hundred and fifty-three tons. I only mention this to show that the rule is to weigh liberally at the mines.

And now, gentlemen, I want to call your attention to something in this connection. You have seen these retail dealers before you, many of them men of considerable intelligence, and active business men There was not a man of them who did not have evidence on the subject which would have been conclusive if the charge was true. In our own case, we showed you the working of every retail yard; we showed from our books the total number of tons coming in, the total number of tons going out, the number of tons of slate sent out, the number of tons of dirt sent out, and the number of screenings sold. We showed a full, fair and open exposition of our business; and that which we showed in our case it was within the power of every man who attacked us to show, and the fact that not one of them did show, is conclusive against the allegation he makes. They come here and swear, one after another, to a general deficiency in weight; I ask, "where are your books; did you make out a statement of the number of tons sold?" The answer is, "no!" I ask, "will you do it?" and the reply is "yes, I will try to." So it was with one after another, but we never have got one such statement yet, and we never will receive one. Will you tell me that the books of a man who sells seventeen hundred pounds for a ton will show that he sent out less tons than he received? I do not care if he swears to it until he is blue, I will not believe it. Why did they not produce the record of the business? The rule of evidence is that he who alleges an offense, and has within his power the means of proving it by the best proof that is known to the law, and fails to produce that proof, is convicted by his own acts. When these people, active business men for twenty years, in Philadelphia, come to you with an allegation of short weight, and being asked to produce their books and show that the number of tons sent out was less than the number of tons received—being invited and requested and directed to do it, and yet fail to do it, and actually withhold the evidence in their possession, there is not one word of their testimony which can have any weight with you in determining the truth of their allegations.

I now come to what may be called the humorous part of this complaint. I do not know that I ought to say anything about it at this time; I have said enough on the subject before, but I feel inclined to go a little further. These gentleman measured us by their own standard; they weighed us upon their own scales. They constructed the Procrustean bed upon which they laid us, to determine whether we were of the proper length. And when we were short they dragged us out, and when we were long they chopped us off, according to their own standard and to none else. *We tested them by their own weights.* We sent out and bought a ton, or two, or three, or four tons from each one of those who made this grievous charge of short weights, the aggregate of which was the one five-thousandth part of one per cent. of our business. We sent and bought coal from all those who testified. The ingenious Mr. SPOONER, who testified, I think, that he had bribed the Legislature, or something of that kind, only gave seventeen hundred and thirteen pounds to a ton. He sold at eight dollars a ton, so that a man purchasing from him paid one dollar and eighty-eight cents for coal that he did not get, or equivalent to *ten dollars* a ton for the coal he actually received. He complains that we are driving him out of business. I should think it would be a grievous thing to Mr. SPOONER, because the average of his over-charge for short weight is $1 34 per ton, and as Mr. SPOONER sells six thousand tons a year, he derives a clear income, over and above the ordinary profit on coal, of $8000 a year for coal that he does not deliver. Why, he does not want a coal yard! He makes more money out of what he doesn't give than out of what he sells! The more we detain Mr. SPOONER'S cars, the better he is off! Bless his innocent heart! If we send him ten cars containing fifty tons and keep two of them back for a few days the other eight cars will weigh sixty tons! Who has a better opportunity than he has to make himself whole? Who can make a ton go further than the immaculate Mr. SPOONER?

Next on the roll of honor, I come to my friend Mr. HANCOCK. I am sorry he is not here, because I understand that Mr. HANCOCK says he intends to knock me down if I abuse him, and therefore if he was here I would be obliged to be very careful. Perhaps it is well for me that you came to New Jersey, because they have a very wholesome method of administering criminal law in New Jersey, and the fighting members of the Retail Coal Dealers' Association must show their prowess upon other soil. I see that our pleasant friends, the Messrs. BRANSON, alone appear in New Jersey, and they will not be led into any indiscretion such as that contemplated by Mr. HANCOCK. Mr. HANCOCK, you will observe, is more liberal than Mr. SPOONER. He has, perhaps, not learned the intricacies of the trade. He gives from eighteen cwt. to nineteen cwt. for a ton; but then he is a candidate for the Senate, and he has to be liberal to his constituents! Mr. SPOONER is already in office; he is a deputy sheriff; but Mr. HANCOCK is only a candidate. The difference between Mr. HANCOCK and Mr. SPOONER on short weight is equal in money value to nearly $1 per ton. SPOONER being already in office gets a dollar more for what he does not deliver than HANCOCK does. What Mr. HANCOCK will do after he has secured his position as Senator the Lord only knows!

SENATOR WAREAM. The implication is that he is preparing himself to fill the position.

MR. GOWEN. Well, Mr. HANCOCK testified on the stand that he had been endeavoring for three years to live down the reputation that he made in the House of Representatives, and he is now qualifying himself for admittance into the graver body by giving eighteen cwt. for a ton to those from whom he expects votes! How far you gentlemen of the Senate will consider that this entitles him either to admission to, or expulsion from, that body, I leave you to determine. At all events, I have to say that when the question of his fitness for entrance into that deliberative assembly comes up, the evidence which I have on the subject of his capacity will be laid before you whenever you desire its production.

The average profit of Mr. FLECK is eighty-one cents a ton for the coal he did not deliver.

Let us go over these three or four cases. Mr. SPOONER derives an of income $8,000 a year from coal that he does not sell. He sells six thousand tons a year. He makes $1.50 a ton on that. That is $9,000. He makes $9,000 on his business legitimately, by getting good rates for coal, and then he makes $8,000 on the business that he does not do; therefore, the less he does the better he is off. But an income of $17,000 clear profit is paid to him by the citizens of Philadelphia for selling six thousand tons of coal per annum, each ton of which weighs in his own scale seventeen hundred and thirteen pounds.

The liberality of Mr. HANCOCK has enlarged his business and he sells fifteen thousand tons a year, and hence he derives an income of $6,000 a year for coal which he does not deliver. Mr. FLECK sells four thousand tons and receives $3,200 a year for nothing. Messrs. WAGNER & SINGERLY sell seven thousand five hundred tons a year, and consequently, at eighty-two cents a ton, receive an income of $6,000 a year for nothing.

These are the gentlemen who are complaining against us, and these are the four who, as my friend Mr. LANE said, testify with the greatest vigor. I have heard it said that it was a remarkable thing that the Almighty had always in this Continent located the great rivers beside the great towns. The usual impression, however, is that the towns were put near the rivers. But when my friend assumes that our witnesses made Mr. HANCOCK'S coal run short because he had testified with great vigor, I have to answer that, by saying that he testified with great vigor because his coal ran short. I have been a district attorney, and have had considerable experience in the criminal courts, and the result of that experience has convinced me that a man who will steal will not hesitate to lie, and I think the testimony of a man who gives one thousand seven hundred and thirteen pounds for a ton is not quite so *weighty* as it would have been if he had given two thousand two hundred and forty. I cannot help recalling the appearance with which these gentlemen took the book, or rather, with which Mr. SPOONER took the book, because Mr. HANCOCK assumed the position of a Quaker, conscientiously opposed to taking an oath of any kind. Consequently he was affirmed, and though being conscientious on the subject of oaths, his first answer to one of my questions, was "That's a damned lie!" SPOONER and HANCOCK, *par nobile fratrum*! are the representatives of the retail coal dealers. I leave them to occupy the position in which they have placed themselves. I believe that "Honest Joe" would be just as bad as SPOONER if he was not a candidate for Senator, but I am bound to give him the benefit of the doubt, and, therefore, I must say that Mr. HANCOCK derives less income from what he doesn't do than Mr. SPOONER does. I should like to make an investigation of his weights, however, after he has succeeded in being elected to the office to which he aspires.

I was very much amused at the effort made by my friend Mr. PETTIT and his client Mr. HANCOCK, to get away from the effect of this testimony. Mr. HANCOCK and Mr. PETTIT say:—"Well, this coal is bituminous coal; it is Lykens Valley coal." Fortunately, we have got the bill for the coal, and it is charged as Lehigh coal. If Mr. HANCOCK can only get rid of the offense of giving short weight by proving that he sells bituminous coal as Lehigh, I do not think he retires with much honor from the contest.

Then my friend, Mr. PETTIT, suggested that slate was lighter than coal. It happens to be heavier; but I do not see how that makes any difference. I cannot, for the life of me, see how a ton of feathers will weigh any less than a ton of lead, and I have been trying to get it through my head ever since I started. I do not see what the bulk of a thing has to do with its weight. Two thousand two hundred and forty pounds make a ton. I admit that the ton of feathers will fill a larger space than the ton of lead; but if HANCOCK cannot get a ton in his cart why doesn't he get bigger carts, or why doesn't he sell three-quarters of a ton? Is that any justification for the manner in which he does business? Ah! I fear very much he is not a Joseph.

But my friend, Mr. LANE, referred yesterday to a letter of Mr. BELL, in which, in answer to a complaint of short weights, he said that it was unfair to weigh coal in any other manner than by taking the car and running it over a scale. Mr. BELL meant that it was unfair to weigh coal in his absence by several drafts upon an ordinary platform scale without his being there to see to the tare; but how it can be unfair to get a weigher of Philadelphia, on a beam scale that will register almost an ounce, or a quarter pound at least, and who lays a canvas on the ground and dumps the coal in it and then picks up the coal and dirt and weighs everything—how such a test can be unfair I cannot see. After all this was over, however, my friend, Mr. PETTIT, said:—"Well, this matter of short weights was only an incident in this case." Three hundred and thirty pages of this great book taken up with the subject of short weights, and then when my friend's ox is gored, he says "it is only an incident." There is a profane tradition that has existed for many years, that a certain man during the deluge, on being refused by Noah entrance into the ark, said that he didn't believe it was going to be much of a rain after all. So my friends who started out with this investigation and had the eyes of the Commonwealth upon them, sustained by such magnificent supporters as JOE HANCOCK and BILL SPOONER, who swore the case right through as they went along—valuable clients who say to their counsel, "you look out for the law, and we will furnish the facts"—with all these advantages "this is only an incident." I think it is something very much like the incident that occurred to the fox who couldn't get the grapes.

Out of the 239 retail coal dealers, fourteen firms testify against us. All are opposed to us, that is to say, they all dislike the innovation we have established in Philadelphia. A great many of them are honest and upright men and would scorn to do a wrong even if they had suffered an injury, but out of all of them, with all the disposition to get us out of the business, only fourteen firms testify. Of course, I count Mr. HANCOCK, Mr. ASHBRIDGE and Mr. FISHER, all members of one concern, as one firm. There were sixteen or seventeen witnesses. I will venture to say there was not a retail coal dealer in the city of Philadelphia whose place of business or whose house was not visited for the purpose of ascertaining whether he knew aught against us. I had letters from some of them during this investigation, saying that they had been subpœnaed, that they had nothing against the company. I replied: "Go, tell all you know; we shall not think evil of you if you know or tell anything against us." But when it is considered that with all this to induce them and excite them to action, they could get but fourteen out of two hundred and thirty-nine, I think you will admit, gentlemen, that the subject is not of sufficient gravity to occupy your attention any further, and I, therefore, dismiss it from my mind, as I believe it will be dismissed from this case, and I only ask to bestow upon my friend, Mr. HANCOCK, and my friend, Mr. SPOONER, the parting admonition, which I will ask them to remember hereafter, that "he who walketh upright walketh surely, but he that perverteth his ways shall be known."

I come next to the charge of unequal distribution of cars. There was hardly anything said about it in the argument, and it is probably not worth my while to refer to it. I only know that after getting through with the retailers in Philadelphia, and then having a test of what the coal miners and operators would say by calling them inadvertently and having them turn out to be the best witnesses we could have produced on the stand, our friends got very sick of Philadelphia, and, as I am told, it was determined in the conclave by the retail

dealers that Philadelphia was not the place to make the investigation. We must "beard the lion in his den." We must go up to Pottsville. The newspapers in Philadelphia are not worth anything; they are all ridiculing us; they are all in the interest of the company. Let us go right to Pottsville. And as for Mr. GOWEN, he will not venture ten miles out of Philadelphia; if he does he will be shot by the miners. We will take the committee where everybody is opposed to the company. Well, gentlemen, it was just where I wanted you to go. Our adversaries had two weeks, and then there was an adjournment of nearly ten days more in which to prepare for the Pottsville campaign.

Mr. DAVID BRANSON moved his headquarters to Pottsville; he established himself in Schuylkill County; he placed himself in confidential communication with all who were supposed to know aught against us. It happened that we had just gone through the long strike; we had discharged quite a number of our operatives, and it was supposed that this would bear terribly against us. Your committee met at Pottsville. And what was the result? Our own officers were examined, and they gave us a character of which we may well be proud. You saw them on the stand; you know how they testified. Our friends abandoned their allegations, but called two or three discharged employees, whom they had subpœnaed. With all the disposition that a man discharged from his employment has to say something bad against his employer—I speak it now to the honor of the men—they said not one word on the stand to reflect upon us in any manner whatever, and our gallant retailers determined, after a few hours in Pottsville, that they would not examine any more witnesses in the coal region, and we came back to Philadelphia. The result of that examination must have convinced you that i there is anything in the business of the company that is done honestly and fairly it is the distribution of cars. It was made a subject of study by my predecessor for some years. The system which he devised has been followed rigorously since. Every colliery is rated at its capacity, every man receives his proportion of cars. If there are five thousand cars, and the calls are five thousand, every man gets one hundred per cent. If the cars are five thousand and the calls are six thousand, every man gets eighty-three and one-third per cent. If the calls are six thousand and the cars only three thousand, every man gets 50 per cent. Nothing is, nothing can be, fairer than this.

Now, I want to say to you that the amount of percentage has nothing to do with the capacity of the road. The less business done, the higher is the percentage of cars, as you will see at once. In the winter, when very little business is done, every man gets one hundred per cent. In the month of October last, we shipped over nine hundred thousand tons, and yet the percentage was much less than one hundred per cent. You see what I mean. It does not follow, because there is a large business that the percentage of distribution is high. People call for more than they can load; their rated capacity they can hardly ever keep up to It happens that the largest business is done with the smallest percentage, and the largest percentages are sometimes given with the smallest business.

There is one thing connected with the subject of car distribution to advert to, and that is the rule recently introduced of giving to a man having more than one colliery, at any one the amount he is entitled to at all. Nothing can be fairer. Take two men, one of whom has a colliery of fifty thousand tons, and the other two collieries of fifty thousand tons each. The one may be entitled to fifty cars a day, and the other to one hundred; but the latter is not entitled to one hundred unless his collieries are working collieries and in operation. In times of scarcity he can stop one colliery and get all his cars for the other. But suppose he does not, the other man gets no more cars. A man cannot have a colliery idle, not doing anything, and then in times of scarcity ask for an allotment for that idle colliery, which has never been working but in the times of these scarcities, and they never exceed more than a few weeks at a time. He can, if he chooses, stop one of his collieries, and take the cars for both at the other; nobody is injured by this, though he is benefited. The man who has but one colliery at a time has not the same advantage; but every colliery will hold in its chutes more coal than is produced in a day. Therefore, the man who has only one colliery has no other resource but to call for his number every day, and stop every other day in working. He saves half his expenses and works every other day full. But if the rule was abolished no good would result to the man who had but one colliery.

[At this point the committee adjourned till to-morrow morning.]

JULY 30, 1875.

The committee met pursuant to adjournment.

Mr. GOWEN resumed his argument, speaking as follows:

Mr. CHAIRMAN AND GENTLEMEN: At the close of yesterday's session, I had gotten through with that part of the argument which I intended to devote to the special charges of short weight and detention brought against us by the retail coal dealers. It is true that these charges occupied a greater share of your attention, and that of the public, when they were being made by the evidence adduced before you than they did in the argument of my friend who preceded me, Mr. LANE, and who really spoke of them in an incidental manner, as if they were only what his colleague, Mr. PETTIT, had called them, an incident of this examination.

I now come to the charge of unlawful confederation or conspiracy, which is alleged against us. It must strike you, who are members of the Legislature, and who make the laws, but who do not execute them, as being very remarkable that a committee of the law-making power is asked to investigate a charge of actual crime. Why do they not indict us? If we are these conspirators, if we have rendered ourselves amenable to the criminal law of the Commonwealth, the courts are open to our adversaries, and courts and juries are only too prone to find verdicts against corporations. If my friends on the other side desire to send me down to Moyamensing, I am at their service at any day or hour of the week, and will respond to the charge without the necessary preliminaries of an affidavit and warrant. I have no doubt, a vast crowd of admiring retail coal dealers would be collected along Walnut Street to see the triumphal procession headed by the President of the Reading Railroad Company on the way to a magistrate's office, and thence to the gloomy walls of Moyamensing prison; and to such spectators it would, probably, be one of the most delightful episodes of this investigation if such a procession, headed by myself, could be formed. Now, I assure my friends that we are ready to respond to the call of the District Attorney of Philadelphia, or of Schuylkill County, or of any of the counties of the Commonwealth in which this conspiracy has been formed, or in which any act done in pursuance of it has been committed; and, fortunately for them, our friends have the opportunity of indicting us in any one of ten or twelve counties, and they can select that one in which the juries are supposed to be particularly averse to corporations. With all this field before them, with the criminal laws plainly written, with the courts of Pennsylvania open for the administration of criminal justice, with the magnificent opportunity they would have for putting the president of a large railway company in the prisoner's dock and sending him to the penitentiary, why should you, who make the laws, be asked to go through a preliminary investigation, in order to find whether we have rendered ourselves amenable to your penal statutes? If we have done so, in God's name let us be indicted, let us be punished by fine and imprisonment, and let this unlawful confederation and conspiracy, which has been the burden of my friends' complaints, be held up to the scorn that it deserves, if its authors have transgressed the laws of the State from which they derive their power.

This unlawful confederation or conspiracy is supposed to have been brought about by the coalition between ourselves and the New York companies—by the formation of the Schuylkill Coal Exchange—and by the stoppage of the production of coal; and I now desire to call your attention to these subjects in detail, and in doing so I will, I think, carry out the promise I made to our friends on the other side by telling them more of this confederation and conspiracy than they have been able to get from any witness examined upon the subject. There was but one witness who knew anything about it, except from hearsay, and that was Mr. PARRISH; and here I ask you to look at this peculiarity of the case. A conspiracy is charged; an unlawful confederation, unlawful in its confederation and formed for an unlawful object; such a confederation as courts darkness and hides from the light of day; such a confederation as, if it exists, shuns the public investigation and public examination, and though we were told how difficult they supposed it would be to prove it, how troublesome it was to find out by any other than one of the conspirators himself the acts of this confederation—yet when one of the chief conspirators was called to the stand, he was simply called to testify to the fact that the public newspapers of the country had contained everything connected with this subject, and that we had published it ourselves and published it to the whole world. Everybody knew all about it. There never was a trade combination, there never was an association of industrial pursuits managed by a committee, the proceedings of which were more public than those which our friends animadvert upon. From Alpha to Omega, from the beginning to the end, not only the object of this conpiracy, but the very detail of the manner in which it was to be carried out, was spread broadcast before the people of this country. If our friends want an investigation to detect and expose a conspiracy, why ask this committee to spend three months of its time to investigate a state of facts that had been published for two years. Upon the subject of confederacy, upon the subject, also, of the ownership of stock in the coal and iron company, by the Reading Railroad Company, which are the only two grave offences charged against us now—the reports of the Reading Railroad Company and the public press of the State had for years contained all the information which has been laid before you, and it must appear to you to be remarkable that an investigating committee was ordered, and that witnesses were summoned for no other purpose than to prove the truth of the assertions which we ourselves had made to our stockholders and to repeat the facts which we ourselves had furnished to the public prints.

I go now, first, into the confederacy with the New York companies. I shall use the word "confederacy," or "combination," or any word which is most offensive to the law, to please our friends on the other side. Names imply but little. I want, first, to call your attention to the manner in which the coal trade of Pennsylvania had been managed for twenty years before this alliance with the New York companies was formed. You have it in evidence that there were two classes of business, as it were—one the line and city trade, and the other the trade which went to tidewater for shipment. It had been invariably the case that the better kind of coal, or rather that which was the better prepared, had gone to the line and city trade, and that about which the least care had been taken, which was treated as simply the surplus or over-production which was difficult to sell, had been sent to tidewater for shipment abroad in competition with the coals of the New York companies. The result of this was, that while prices were fairly maintained in Philadelphia and in Pennsylvania, and while people there paid a fair price for their coal, and sometimes a very high price, the keenness of the competition was so great that the manufacturer who smelted iron ore in the harbor of New York bought his Pennsylvania coal at a dollar a ton less than the man whose furnace was located in the valley of the Schuylkill. How long would it have taken for such a system to destroy the manufacturing industry of the State of Pennsylvania? Why, gentlemen, when I became the President of the Reading Railroad Company, it was the habit, and it had been the habit for years, and it was continued for one or two years, because it was impossible to get rid of it at once—it was the habit to allow as high as a dollar a ton drawback at Richmond upon the coal that was sent out of the borders of the State. The man whose furnace was located in Philadelphia, or along the line of the Reading road, paid two dollars for his freight, and the man whose furnace was located in the valley of the Hudson got that freight for a dollar a ton; and it was simply on account of this competition between the New York companies on the one side and the Reading Railroad on the other to find a market for their surplus coal. Manufacturer after manufacturer located along the line of our rails came to me to complain of this injustice. They said: "How can you expect, Mr. GOWEN, to build up the trade of your own region, if you permit such a policy to be carried out as will give to our rivals, located in the principal market of the country, on the waters of New York Bay and the waters of the Hudson, the power to buy the coal which passes our very door, and goes one hundred miles further, at a less price than you charge us?" No answer could be made to the complaint; it was unanswerable. There never was a system so unjust; there never was a system which would have worked more ruin and injury to the very people of Pennsylvania, whom it was our duty, as I am sure it will be your pleasure, to protect.

The coal that went to these competitive points, as I have told you, under the fostering care of my friends, the factors, was not always in the very best condition. It was very well known that Schuylkill coal, in the markets of New England and New York, had a very bad reputation. A man having a very good colliery in the Schuylkill region at which he prepared one hundred thousand tons of coal, would sell eighty thousand or ninety thousand of it in Philadelphia and along the line of the road. He had to have a market for his surplus, it might have been ten thousand or it might have been twenty thousand tons per annum. It was a well-known coal; it had a good reputation. A factor took hold of it, and announced himself as the selling agent for this particular kind of coal, and when he got ten thousand tons a year from the colliery which had a reputation, he sold one hundred and twenty thousand under the same trade designation—that is to say, he bought one hundred and ten thousand tons of inferior coals and sold the whole as the product of the good colliery. The result was most iniquitous, not only to the owner who had the good colliery, but to the purchaser who bought upon the reputation of the coal. The Reading Railroad Company was interested in building up the line of its road. A sum of twenty, or thirty, or forty, or fifty cents a ton, more or

less, in the price of coal amounted to nothing compared with the profit it would derive from having that coal burned in the process of manufacture on the line of its own rails. The Phœnix Iron Company, located at Phœnixville, which has just built a rolling mill which, I believe with one or two exceptions, is the largest in the world, was for one or two years considering the propriety of moving its large works from the valley of the Schuylkill and locating them on the waters of the Hudson; and it was only when that company saw that the policy of the Reading Railroad Company was to make coal cheaper the nearer it was to the mines, and to increase the price with every mile of distance it was transported, that they determined to remain where they were, and to expend from one million dollars to one million three hundred thousand dollars in the erection of an establishment that will employ hundreds of men, and produce one hundred thousand tons per annum of finished iron.

I could go over the whole line of the road, from beginning to end, and I could show you this same state of facts. I could take up the statistics of the iron manufacturers of the Hudson, and show that at that great distance from the coal region, the prosperity and the wealth and the industry of the State of New York were being built up at the expense of the State of Pennsylvania with fuel dug within our own Commonwealth, and of which our State had a monopoly. Why, gentlemen, look for one moment at this. Suppose, by any arbitrary trade regulation you could say that there should be an export duty of one dollar a ton levied upon every ton of anthracite coal that left the borders of Pennsylvania. I grant you cannot say this; I grant it would be in violation of the Constitution of the United States; I grant that it would be probably unwise to do it. But what would be the result? Every man making iron with anthracite coal would locate his furnace witnin the State of Pennsylvania, and in ten years the population of the State would double. If all the manufacturing industry that uses anthracite coal, if every furnace fire and the fires under every boiler lighted by anthracite coal, were located in Pennsylvania, in order to secure the benefit of cheap fuel, how vast would be the increase of the wealth and population of our own great Commonwealth?

Our object in entering into this alliance with the New York companies was simply this: To announce, as the future policy of the companies, that the price of coal should be lowest at the mines and increase with every mile of distance over which it is carried; that it should be just that much higher in the city of New York than it is in the city of Philadelphia, as is due to the increased distance of the former from the region where the coal is produced. It is so adjusted now that, instead of coal being a dollar a ton cheaper in New York, the difference between the price of coal in the port of Philadelphia and in the city of New York is exactly one dollar a ton in favor of Philadelphia; and coal in Boston is exactly so much higher than coal in Philadelphia as is due to the cost of carrying it from Philadelphia to Boston, namely, at present $1 60 per ton. A man desiring to make use of Pennsylvania, and to locate within her borders his manufacturing establishments to smelt the iron found beneath our hills, can locate his works now with absolute confidence that in the whole future the policy of the Reading Railroad Company will be to prevent any man who is at a point further from the mines from getting his coal cheaper than the man who is the nearer. That, I say, he can do with absolute confidence, unless the complaint of our friends, the retail dealers, is to lead to some action on your part, gentlemen, which will prevent our carrying into effect the policy which we have inaugurated.

Now, what is the New York combination of the six companies, or rather five of them, for there is one of them which, although acting with us, may be considered only as an honorary member of our association. The confederacy is simply this: to agree upon a price at which each will sell whatever coal goes to the competitive markets, which includes all coal reaching the Hudson River; all coal which passes from Philadelphia out of the capes of the Delaware, and all coal which leaves Philadelphia and goes through the Delaware and Raritan Canal. The price of such coal is fixed by a committee, meeting monthly. That price varies with the season. It commences low; in truth, it commences at the opening of the season at a rate at which there is no profit in the coal at all; in other words, if the coal had to be sold at that rate throughout the whole season, in many instances it would net a loss to the miner. But the object of making a low price at the start and gradually advancing it during the season, is to secure such an average as will realize a fair price. There is, as you can readily understand, a great disposition on the part of persons purchasing coal to postpone their purchases as late as they can, for the reason that the coal is principally used in the winter, and hence the shorter time that intervenes between the date of purchase and the date of sale, the better it is for the man whose capital is invested in the business. The consequence of this has been that sometimes in the months of June and July we have had no market at all for coal, and have been obliged to stop production—everything has been blocked up—and in the months of September, October, and November there has arisen such a demand that we have been utterly unable to supply the amount required, and prices have run up to an exorbitant extent. The result of this state of things was a fluctuation in values, which was ruinous to trade and injurious to the public. Now, however, the price of coal is so arranged that the difference in favor of the man who purchases early in the year is more than the increased interest he has to pay for carrying his product. It is, therefore, to the interest of many to lay in as early as possible; as we approach winter a demand always springs up, and thus we get a regular business throughout the year, which enables the collieries to keep running, enables the men to secure employment, and gives them, and will give in the future, steady work throughout the year, and prevent ruinous fluctuations in the market price of coal.

But, gentlemen, look at the advantage of this policy to the manufacturer. It makes but little difference to him if he pays twenty-five, or thirty, or forty cents more or less for his coal, provided no rival in trade gets an advantage over him. If a furnace-man at Phoenixville makes a contract for his coal and pays three dollars and fifty cents a ton for it, he is amply protected by his knowledge of the fact that nobody else can get it any cheaper; but if one furnace-man can buy it for three dollars and fifty cents, and after laying in his stock, a rival can buy it at two dollars and fifty cents, the difference is one dollar and seventy-five cents in favor of the man who purchased last, upon each ton of pig iron made by it. Hence, now every manufacturer is relieved from the fear of any rival having the advantage over him, and he can lay in his coal whenever he pleases.

Just here I desire to call your attention to a negative fact, which is of more importance than any positive one which has appeared. The Reading Railroad Company has a business which is in its character entirely a local business. It has no through trade, like the Pennsylvania Railroad, the Baltimore and Ohio, the New York and Erie, and the New York Central, and yet it is a road whose receipts from railroad transportation alone are now, and have been for many years, greater than the entire receipts of the Baltimore and Ohio Roilroad, which is one of the great through lines of the country. Almost all of our receipts are derived from local business, from that business which, as classified by other railroad companies, is considered local—as compared with competitive. We are the only company that is confined almost entirely to business originating on our own lines We are brought in direct contact with the producer at the mines and with the consumer at the end of the line. Throughout the entire course of this investigation, from beginning to end, *not one single producer, not one single manufacturer, not one single consumer of coal* has appeared before you to make a complaint against us. Is there any other corporation in the United States that could show such a record? What! investigate us to see whether we have abused or misused our franchise? Try to take away our charter from us because it is to the injury of the public! And who is the public? Three middlemen, and fourteen retail coal dealers! "The public," of course, "very large" and "very respectable." The middlemen are the "respectable" portion, and the fourteen retail coal dealers are the "large" portion of "the public." It reminds me of the three tailors of Tooley Street, London, who issued a proclamation commencing, "We, the people of Great Britain!"

Let me dwell upon this for a moment. Abuse and misuse our franchises! We conduct our business to the injury of the public! Not one producer, not one consumer, not a single manufacturer, comes here to say aught against us. The doors are flung open; it is published throughout the length and breadth of the Commonwealth that an investigating committee—an unusual thing—is appointed by the Legislature of Pennsylvania to look into grave charges affecting the Reading Railroad Company. The retail coal dealers and the factors employ counsel. The process of the Commonwealth is placed in their hands. Every man is invited to say something against us. The tale-bearer and the eavesdropper and the discharged employee are interviewed for the purpose of seeing if they cannot be induced to say something to blacken our character. And at the end of the investigation, and upon such testimony as h s been produced, a committee of the Legislature of Pennsylvania is asked to take away our charter, because we have injured the public; and yet not one consumer, not one producer, not one manufacturer has said aught against us; nobody has said a word against us but these three factors and these fourteen retailers—the one class of which is prevented from exhorting forty cents a ton upon the coal trade as it passes through their hands, and the other of which, or some of their representatives, are deprived of the splendid privilege, of selling seventeen hundred and thirteen pounds for a ton of coal. They appear as the representatives of the people of the great Commonwealth of Pennsylvania to ask you to take our charter away from us because Mr. SPOONER cannot sell seventeen hundred and thirteen pounds for a ton any longer! Why, gentlemen, it is monstrously absurd! True, our friends did subpœna three or four gentlemen in Philadelphia who are interested in the production of coal, but they wished they had not. They had very much better have left them at home, as these three or four gentlemen interested in the production of coal, and factors as well though they were, gave us such a character and testified so certainly to the benefit which our policy had secured for them, rivals though they were, that we could rest this entire case upon their testimony alone, and ask you not only for an acquittal, but ask you for some words which should be words of commendation for the manner in which we have conducted the business of the company, and for the benefits that have resulted from our policy to the two classes which alone deserve your attention, namely, the producer and the consumer.

Now, gentlemen, upon this question of the price of coal, it is not denied that at retail in the city of Philadelphia the price of coal is nearly a dollar a ton less than it has been before for many years. At the mines, the price is from twenty to thirty or forty cents more than it was on the average just before we entered into business. I stand here now to say that it is not to the interest of the Commonwealth of Pennsylvania that any great industry within its borders should be conducted at a loss. We are just emerging from a great panic; the prostrated industries of the country are just beginning to lift their heads from the blow they received in September, 1873. It is but three weeks since we discovered for the first time that there was a demand for the cereal productions of this country which has raised the price of wheat fifteen or twenty cents a bushel. Gentlemen, it was like a God-send to the whole country. Twenty cents a bushel added to the value of wheat produced by the farmers of this country has put the price of gold down three or four per cent., and made the paper currency of this country appreciate that much nearer to specie. I take it that in this respect there is no difference between coal and wheat. Anything which is either the perennial product of the soil or which is taken out of the soil and exported, adds to the wealth of the country that produces it. The vein of coal lying in the ground is that much dead matter. When taken out it represents a dollar and a half expended in the labor market, and its real and intrinsic value is fifty cents per ton in addition, and that fifty cents per ton—produced, as it were, from nothing - passes to the credit of the State of Pennsylvania in the balance-sheet of international or inter-State exchanges. If it is to our interest that the farmers who produce our wheat should get a good price for it, why should it not be to our interest that a great industry like the coal trade should be successfully prosecuted? Gentlemen come here and complain of twenty, thirty or forty cents a ton added to the price of coal at the mines. Why, that is just the difference between the bankruptcy and prosperity of the entire coal region. Twenty-five to forty cents a ton added to the price of coal at the mines is just the difference between the prosperity of a great producing region and its absolute bankruptcy. Let the price of coal be ten cents a ton less than it costs to produce it, and every industry is stricken down in the coal fields; the man whose capital is invested in the mines fails; the men whom he employs look in vain on pay-day for their wages; their employer is sold out by the sheriff, and unless the property brings enough to pay the lien for labor the employees get nothing. But put up this price twenty-five to fifty cents, make the business prosperous, and you have a prosperous region and a prosperous community.

My friend, Mr. LANE, the day before yesterday, made the most grievous complaint against us. He held us up to the withering scorn of the world, because, he said, in the panic of 1873, when everything else was broken up and bankrupt, we were not. Why, gentlemen, he gloated over it as if it was a magnificent thing for the industries of Pennsylvania to be bankrupt; as if it was something that ought to occur every year, and as if the intelligence and the ability which had saved a great region from bankruptcy were to be condemned and punished. Is he right? What would have been the condition of Pennsylvania in 1874 if the coal trade had suffered with the bankruptcy of the monetary interest in 1873? The coal trade went on; men received their wages; merchants bought and sold; notes were met and bills were paid; and I do believe that the coal region, notwithstanding the prostration of other industries,

was the only region in Pennsylvania that was not seriously affected by the panic. Was it to your interest, was it to the interest of the State, that it should be so affected? Was it to the interest of the State that the forty or fifty thousand men toiling to produce the coal should have had their wages reduced, and, probably, on pay-day have a bankrupt employer to call on to pay them? Was it to your interest that they should look for the payment of their wages out of the proceeds of their employer's property after a long course of expensive and exhausting litigation? Or was it to your interest and to the interest of the State you represent, that these people should be paid promptly, and that the business should be conducted so as to yield some profit to those engaged in it? True, the prostration of the iron trade affected the coal trade; true, we could not have a market for our entire product, and there were times when we could send no coal, because everything was full; and that was the only loss the industry of the coal region suffered.

Now, gentlemen, if it is to the interest of the Commonwealth that ruinous competition should go on and articles be produced below their cost, then we ought to follow the example of the pig-iron manufacturers. Look through the iron-producing regions of Pennsylvania and you will see from two-thirds to one-half of the furnace stacks out of blast, and in every iron mine along the valley of the Schuykill you will see laboring men, men of some skill, men able to mine iron-ore, working for ninety cents a day, when in the coal region we are paying the lowest class of unskilled labor a dollar and a half, and our skilled miners are earning three dollars per day. Is it to the interest of the Commonwealth that those men should work for ninety cents a day, or is it to its interest that they should receive good wages?

Let me call your attention, gentlemen, to what you are familiar with, and what has occupied a great share in the public attention, and that is the controversy between the Baltimore and Ohio Railroad and the Pennsylvania Railroad within the last two or three months. Was that competition a benefit to the public? We tried it; we tested it. Was it for the interest of the public that two great railroad companies should be fighting each other and carrying produce at less than one-half the cost of the service? Everything was deranged by it. The merchant who had laid in his stock of goods in Chicago, based upon the ordinary charges of transportation, found his rival enabled to fill his store, owing to this sudden and excessive competition, at one-third of the rates that he had paid.

If the war between the Baltimore and Ohio Railroad and the Pennsylvania Railroad Companies had continued six weeks longer, it would have produced in the stock markets of the country a panic—a panic almost equal to that which followed the suspension of Jay Cook & Co. Had it continued longer, almost every foreign holder of the securities of these companies would have hurried them home upon our markets for sale. Can you conceive of a depression of values resulting from a vast quantity of shares and bonds forced upon your markets, day after day, and sold at a sacrifice? The time has passed when the legislative power of the State must say that such ruinous competition shall exist as will reduce the price of every article below the cost of its production. The commercial prosperity of a Commonwealth depends upon the amount of money poured into its coffers from the products which pass beyond its borders.

Let me call your attention to another point. If this combination is an unlawful one, then every combination of the same kind is unlawful. The East and West freight lines of the country—the Baltimore and Ohio, the Pennsylvania, the New York and Erie, and the New York Central Railroad Companies—the four great East and West lines meet by their representatives once a month, or periodically, at some fixed time, and have been so meeting for years, for the purpose of doing just exactly what we do in the coal trade—for the purpose of agreeing upon a fixed rate of freights, and to which each one shall adhere, for the transportation of products between the East and West. They agree in many cases to a *pro rata* of distribution exactly as we do. We lived under it for years, and it was only when they abandoned this agreement among themselves, and entered into the open warfare which has just closed, that we had a state of things existing in this country which excited the serious apprehension of every intelligent man.

There are, I may say, fifty trades—I have here a list of some of them—managed exactly as the coal trade is managed. Every pound of rope that we buy for our vessels, or for our mines, is bought at a price fixed by a committee representing the rope manufacturers of the United States. Every keg of nails we buy, every paper of tacks we buy, is bought at a price fixed by the representatives of those who make the articles. Screws, and wrenches, and hinges are bought and sold exactly in the same way. We never buy a boiler flue for our locomotives that is not bought at the trade price, fixed by the representatives of the mills that manufacture it. An iron beam for your houses or your bridges is never bought except at a price agreed upon by a combination of those who produce it. With gas-pipe it is exactly the same. With fire-brick it is exactly the same. Every piece of terra-cotta pipe for drainage, every keg of powder we buy to blast the coal we mine, is bought under the same arrangement. Every pane of window glass in this house was bought at a scale of prices established exactly in the same manner. White lead, galvanized sheet-iron, hose and belting, and files, and numerous other articles of commerce, are bought and sold at rates determined in the same way. When my friend, MR. LANE, was called upon to begin his speech, the other day, and wanted to delay because his stenographer had not arrived, and I asked Mr. COLLINS, the stenographer of your committee, if he would not act, he said no; it was against the rules of the committee of stenographers; he could not do it I said, "Well, Mr. COLLINS, I will pay you anything you ask; I want to get off, and would rather pay you myself than have delay." "Oh!" said he, "prices are established by our combination, and I cannot change them." I would just here suggest to you a point of law, that under the new constitution you cannot pass a special law affecting dealing in coal; and if you strike down all these industries in Pennsylvania, what becomes of the prosperity of the State?

But now let me speak of the coal trade alone. There is hardly one item which enters into the cost of the production of coal that is not paid for by us or bought by us at the price, and according to the rules, established by a trade's combination that represents it. Every keg of powder that is blown off in the mine is bought in this way. Every piece of rope we use is so bought. Every keg of nails we use is bought in the same way. Every piece of pipe we use to conduct the water to our mines is bought at a price fixed by a combination. Every wrench and every nut and every screw that we use is bought in the same manner. And when we come to the price of labor, which enters more than anything else into the cost of coal, we are met by a combination, and are often obliged to pay the price established by that combination. But when, driven to the wall ourselves by combinations, we resort to a combination to resist those of others, and ask to be put upon the same category with those from whom we purchase supplies, we are met with an objection which is not made in any other case, and which we should not have met in this instance had it not been for the fact that we interfered with Mr. SPOONER'S selling seventeen hundred and thirteen pounds for a ton of coal!

But the coal trade is different from any other, and I ask your serious attention to a few suggestions which I shall throw out to you in order to show you why the coal trade should be managed differently from almost any other.

In the first place, the bulk of the product is enormous. We transported the day before yesterday 34,700 tons; yesterday, 37,150 tons; 35,000 tons of coal a day make a train *sixteen miles in length* and such a train is coming down the road every day. We cannot hold such a product unless the people are ready to take it, the bulk is so enormous. A furnace-man, if he has capital, can put his furnace in blast, and upon a half acre or even a quarter acre of land, he can hold the product of two or three years. He can pile it up. It does not deteriorate. It represents his capital at all times. Further than that, it is one of the best collateral securities he can have for borrowing money. But we carry in a week over 200,000 tons of coal, and ten days' production of our region will fill every available place in which it is possible to put the coal. Coal at the mines is worth but about two dollars per ton. It cannot stand the cost of much handling. If you can run it on to trestles and dump it by gravity it costs but a few cents to handle, but if you have to resort to expensive machinery for stocking coal, it will cost from twenty to thirty cents a ton to handle it, and the cost of handling and re-handling will take away all the profit.

Coal deteriorates by exposure to the atmosphere. It may last a year, and it may last in some cases only six months. There are some soft coals which will be injured in three or four months, if the weather is very severe. You cannot store coal as you can iron or lead or the product of the loom; and you cannot hold it as you can the product of the soil. Therefore, after your storing places are full, there is no other place to hold it except the mines, where nature placed it.

In addition to this, there is the risk of capital invested in the trade. You have been in the neighborhood of Pottsville, at the shafts of which I spoke yesterday, and you saw what will represent an investment of $1,200,000 when it is completed. A defect in the gauze of a safety lamp in one second may destroy it all; some indiscreet miner going into a dangerous place with an open lamp in his hand may cause an explosion which involves the destruction of everything. The spark of a passing locomotive may rest upon the frame structure of the breaker, and the whole structure may be enveloped in flames. There is hardly any business in which the risk to capital is so great as in the coal trade.

Again, we have faults in the veins; we cannot see them; we do not know when we may meet them. A man may have spent $300,000 or $400,000 in opening a colliery; everything may look prosperous, his improvements may all be of the first class, the veins all in excellent condition, the coal good, and instantly the blast exposes a rock-fault, and the labor of years may be lost. There is no other business which is subjected to so many fluctuations as the coal trade.

And now, gentlemen, I approach a subject to which I desire to call your careful attention, and which I suppose I must touch as tenderly as such a subject can be touched, and that is the relations which exists between labor and capital. There is no region in the State, perhaps, in which disturbances occur more frequently. There is no evidence on this subject I grant you; the matter was to some extent ignored in the examination, but it has occupied a large space in the public attention, and you, I apprehend, could not be doing your duty unless you heard from some one or the other of us some statement in regard to these labor troubles.

It will not do to say that these troubles in the coal region result from the inadequacy of the price paid for labor, because I believe without exception the rates paid are the highest in the world. The high rates have had the effect of attracting to the coal region a surplus of labor, more than sufficient to do the work required, and it is the effort of this surplus to receive an employment which it cannot really get, that has led to these disturbances. Do not understand me for one instant as reflecting, in any manner, upon the laboring class of the community. I say here willingly and gladly that the great majority, I believe ninety-five out of every one hundred of the men employed about the mines in the coal region, are decent, orderly, law-abiding, respectable men; but there is among them a class of agitators, a few men trained in the school of the Manchester cotton-spinner—men brought here for no other purpose than to create confusion, to undermine confidence, and to stir up dissension between the employer and the employed. I yield to no man living in the respect and admiration that I pay to the workingman. Let him who will erect an altar to the genius of labor, and, abject as an Eastern devotee, I worship at its shrine.

> "Gathering from the pavement crevice, as a floweret from the soil,
> The nobility of labor, the long pedigree of toil."

And I ask your attention for a few moments to my advocacy of the rights of labor. I stand here as the champion of the rights of labor—as the advocate of those who desire to work and who have been prevented from doing so. I stand here to array before you a class of two or three men out of every one hundred, who, by their machinations and by their agitation, have held in absolute idleness and starvation thousands and thousands of men for months. Why, gentlemen, look at what we have gone through with. When people object to a profit of twenty-five or thirty cents upon the ton of coal, I ask them to look at what those who mine the coal have had to submit to in the last six months. I have had printed for your use a statement, from the daily reports coming to me during the strike, of the outrages in the coal regions. Here I want to correct an impression that goes out to the public, that these outrages are intended to injure the property of the employer. They are not. We do not believe that they are. These outrages are perpetrated for no other purpose than to intimidate the workingmen themselves, and to prevent them from going to work. I shall not read the list; it is at your service, and you can look over it and see the position we have occupied for months. But let me mention a few of the glaring instances of tyranny and oppression. At a colliery called the Ben Franklin Colliery, the employees of which were perfectly satisfied with their wages—had accepted the reduction early in the season, and were working peacefully and contentedly—the torch of the incendiary was applied to the breaker at night. These men, having families to support, working there contentedly and peacefully, were driven out of employment by a few dangerous men, simply for the purpose of preventing them from earning their daily bread. I had some interest in the subject of the amount of their wages, and I asked the owner of the colliery what his miners were actually earning at the time when they were prevented from working by the burning down of the structure in which they were employed, and he told me that the lowest miner on his pay-list earned sixty dollars a month, and the highest, one hundred and thirty dollars, and

yet, although these men were peaceful, law-abiding men, they were driven out of employment by an incendiary fire. At another colliery, within five or six miles of this, a band of twenty or thirty men, in the evening, almost in broad day-light, went to the breaker, and by force drove the men away and burnt the structure down. It belonged to a poor man. It was a small operation. The savings of his lifetime were probably gone, and his own employees, who had nothing against him and who were perfectly willing to work, were thrown out of employment and probably remain out of employment to this day. It is only six or eight weeks ago that our men signified to us their willingness to go to work; they told us they were tired of the strike and wanted us to start our collieries; and when we did so a band of five hundred or six hundred men appeared and drove them away from their employment, with the exception of those at one colliery. And, let me tell you, out of those five hundred or six hundred men there are not fifty to blame. A little band of ten or twelve men will start through a mining village and will by force compel every man they meet to join them, and against his will, many a law-abiding man is forced by the risk of personal danger to join an attacking party and render himself amenable to the laws of the Commonwealth. There was, as I have said, one colliery at which work was not stopped; and never, perhaps, in the history of labor has there been such a case as that. We got notice of the threatened attack in time at only one colliery. We placed twenty-five armed men around the mines to protect their brethren who were working. They were armed with navy revolvers, and behind each stood a man with a sixteen-shooting carbine to hand to them when their navy revolvers were exhausted. That little band of determined men stood there for five hours facing an attacking party of five hundred, and under such protection, men were enabled to continue their work

"In the sweat of thy face shalt thou eat thy bread" is the primeval curse pronounced upon mankind, and from many an humble cottage throughout the land, by many a lonely bedside, when gaunt starvation looks into the haggard faces of the poor, there rises up night and morning the earnest supplication, "give us this day our daily bread," but when the father of that starving family and the husband of that emaciated wife goes forth to earn his daily bread, he is met by the pistol of the assassin and the torch of the incendiary, and driven back to his home to starve.

Gentlemen, we meet next year to celebrate the Centennial Anniversary of the Declaration of American Independence. We expect to attract to Philadelphia a concourse of the citizens of the whole world. We shall point with gratified pride to an empire built up under republican forms of government. We shall show them to an asylum where the abject, and the humble, and the poor from all climes and from all lands have found a refuge. We shall tell them that the shackles have been stricken from the limbs of millions of slaves. And when we glory in this prosperity, and when we boast of all this freedom, let us not forget that, almost within the shadow of Independence Hall, tens of thousands of citizens are subject to a tyranny and a despotism such as neither Khan nor Caliph ever exercised, and such as in the wildest dream of power never was conceived by Sultan or by Czar.

Why, gentlemen, it is but a few weeks since I received a letter from a miner, a man who had worked in the mines for thirty-six years, the father of a family, and, I believe, the owner of a household; a well-written letter, a letter such as any employer would be glad to receive from his employee, a letter stating that the writer feared that he and his companions were in the wrong, that they had made a mistake, that they were anxious to return to work, that he, having met me on one or two occasions when a committee of laboring men met one of their employers, was anxious to have my opinion upon the subject. I never volunteered an opinion, I never wrote or urged any laboring man to do anything during a strike; but in this case I wrote a letter, and endeavored to show my correspondent what I supposed to be the folly of the course which his associates had been pursuing. He acknowledged the receipt of my letter, intimated that he was convinced, and that the men would return to their employment. It became known through the post office that this man had received a letter from me. He was charged with that as a heinous offense. He had a great deal of personal independence of character, and he met his accusers face to face, and asked them whether in this country a man had not a right to write a letter to whom he pleased, and to receive an answer, and he defied them. The courage with which he met them succeeded for the instant, and he left to go to his home; but when he reached his home at night he found there the anonymous notice: "Leave this county within twenty-four hours, or you are a dead man." Now he was powerless—for who can defend his life from the secret assassin! He left—left his family, and remained absent until he hoped the affair would be blown over; until the men should return to their senses, and he could safely go back to work.

Think of it, gentlemen! Here was a man who desired to work; a man who had no complaint to make against his employer; a man whose object it was to be friendly with his employer; a man whose attainment entitled him to the respect of his employer; a man who had a family, and who owned his house, and he is driven out and driven from his home by a tyranny which holds thousands of men in subjection, and which I ask you to do your utmost to destroy.

What avails it to these men that they are ready and willing to work? Of what avail is it to them, that we offer them work? Of what avail is it to them that the wages that they could earn would amoumt to $100 or $120 a month? They cannot work; they dare not work; to attempt to do so is to invoke destruction. A man may go forth in the morning from his own humble home, determined to return at night with the wages of his labor for the support of those who are dearer to him than life itself; if he is armed, vigilant and courageous, he may protect himself from open violence by day; but in the silence of the night, his home is riddled with bullets, and he is driven out into exile—away from family and away from home—out into the darkness and into the night, a fugitive and a wanderer—with every man's hand against him—and for what? For daring to submit himself to the primal curse of the Almighty, and to earn his bread by the sweat of his brow. Far back in early ages, in Roman amphitheatres, Christian martyrs were torn to pieces for daring to worship God; in later times men were condemned to death or doomed to exile for uttering treasonable sentiments about the form of government. There has been prescribed to certain people, and to certain races, a particular form of dress, and disobedience to the decree was punished by ostracism, or by death; and held up to the withering scorn and detestation of succeeding ages have been all forms of human oppression, by which

"Man's inhumanity to man
Makes countless thousands mourn."

But it has been for the latter part of the nineteenth century—for a land boasting among all nations of the world that it is the land of liberty; it has been reserved for the United States of America, and the State of Pennsylvania, to witness the spectacle of the right of a man to labor for the support of his family denounced as a crime by the decrees of an association which rewards submission by starvation, and which punishes disobedience by a ghastly and a horrible death.

Why, but a few weeks ago we were obliged to conduct the business of the railroad company in the mining region under an armed force. Every passenger train that passed over the road was preceded by an engine with an armed posse. The locomotive engineer, ever foremost at his duty and unflinching at the post of danger, standing with his left hand on the throttle-valve, and his right upon a pistol, as his train passed through dark glades, or by deep defiles, where almost every tree and every rock concealed an armed assassin, thirsting for his life. We were obliged to send men armed to the teeth to protect their fellow men in the right of labor; and this police force had to be lowered and passed down the inclined planes over which you passed, and which you saw, where the human freight is suspended by a few threads of wire-rope. At a time when a number of these officers were about to go down one of these inclined planes, it was found that some cowardly assassin, with an axe, had cut the wire-rope in three or four places, not so deeply that the danger should be discovered by the eye, but rather that it should be hidden until the strain was upon it—cut for no other reason than to precipitate to a sudden and terrible death those brave men who were there in obedience to orders, to protect their fellow-laborers in the right to earn their daily bread. By a most fortunate accident the discovery of this outrage was made in time to avert the terrible calamity which would otherwise have been inevitable.

Now let me refer you to the relation of the Reading Railroad Company to those whom it employs. We have nearly twelve thousand railroad employees. We have always maintained in our own shops the old system of indentured apprenticeship; we have never permitted that system to be broken down. Almost all the skilled workmen in our employ, I may say, were educated and trained in our shops. The superintendent of the road was there; the engineer of machinery was one of our indentured apprentices. We have in our employ six hundred and fifty-one people who have been with us over twenty years, and of these, one hundred and thirty-eight have been in the employ of the company for more than thirty years. We rarely have any trouble with our railroad employees except in the coal region; we try to treat them civilly; we try to treat them respectfully; we pay them promply in cash, and we never speculate upon their wages; we are sorry when a depression in trade compels us to reduce their pay. It is to our interest that they should be well paid. When they grow old and become worn out in the service of the company, we invariably give them a pension to support them in old age. You have seen many of these men; they have appeared before you as witnesses, and have accompanied you on your several visits to the works of the company; you know them; you have seen the relations that exist among them and between the subordinate and superior officers of the company, and those relations of kindness and friendship we are anxious to introduce into the coal region. We desire the miners and laborers of the coal region to stand to the coal and iron company exactly as the employees of the railroad company stand to it. But, gentlemen, the few marplots, the little band of agitators, the men whose business it is to breed mischief and to sow the seeds of dissension, are ever on the alert to prevent any other relation than that of hate and animosity from springing up between employer and employed. When we entered into the business of mining coal, almost the first action I took with reference to the labor question, was to say to the superintendent of the mines, "I invite a committee from every colliery of one or two workingmen to meet with me in Pottsville; I will go there to meet them, I will agree with them, if they are willing, that if each miner and laborer will contribute a little sum per diem out of his wages, say a half or a quarter of one per cent., that whatever amount is so contributed will be doubled by the company out of its own treasury, so that if the men raise $10,000 per annum the company will put $10,000 more to it and make it $20,000, and the entire sum thus raised will be placed in the hands of trustees (some of whom can be selected by the men), as a fund out of which any man who is injured by an accident shall be supported until he is well; out of which the funeral expenses of every man who is killed shall be paid, and out of which an income shall be derived by the widow and minor children of every deceased employee of the company." It was one of the best systems that could have been devised for the benefit of these men; but it was instantly met with a storm of abuse and indignation; emissaries were sent out throughout the country by these people who call themselves "Labor Reformers," to warn the men that it was a dangerous scheme, and that the intention of the company was to do something dark and sinister. The scheme was therefore abandoned, but during the next year or two we saw the misery and the poverty which were the inheritance of those unfortunate families who had been deprived by death of their protectors, and on the first of January of this year we announced as a rule of the company that whenever a man was killed in its service a certain sum should be paid for his funeral expenses; that his widow should receive a fixed sum in money per week for a determined period, or so long as she remained a widow, and that every minor child of the deceased unable to work should receive a fixed sum per week; all of which was to be paid out of the treasury of the company. As this required no co-operation or contribution by the men, the rule went into force and we are acting under it to-day; but the newspaper, which professes to be an advocate of the rights of labor, ridiculed and denounced the offer, and held us up to the scorn and detestation of our workmen because we had dared to attempt such a thing! Why, gentlemen, whenever we approach the men to establish kindly relations between them and ourselves, we are met by the interposition of persons who live upon agitation; whose business it is to destroy confidence; who are sent into the region for no other purpose than to create trouble; men whom you well know, whom you have seen before you at Harrisburg, and who represent themselves as the leaders of the laboring classes and the controllers of the labor vote. Why, gentlemen, their claim is a mockery. They are not leaders of the workingmen. They have over and over again deceived them. Their trade is to sow dissension, and to implant in the bosoms of the men suspicion and distrust of their employers. In this country, every field of industry is open to the workingman. A boundless continent is at his back. Every industrious and skilful man can earn in a few years enough money to buy him a farm. He that is to-day the humblest and the meanest may to-morrow be the proudest and the greatest. The children who are to-day born in a hovel may transmit to their posterity the inheritance of a palace. The humblest worker in the coal mine may aspire to fill the first place in the gift of the people.

Here let me call your attention to the peculiar position occupied by a railroad company employing a vast laboring class, that constitutes almost the entire population of a district. All these people living together make the population upon which we depend for our merchandize and passenger traffic. What is the trifling difference saved by us in their wages compared with the profit we derive from the traffic dependent upon their prosperity? It is to our interest that the coal region should be a prosperous one. The individual coal operator,

who has a lease for ten or twenty years, may have no ulterior object. He may have no other desire than to make money during the existence of his lease, and retire with a competency when it is terminated; but we have gone into the coal region to stay. We own the lands; we own the railroads. Everything that adds to the wealth and adds to the prosperity and increases the population of the district increases the wealth and augments the prosperity and adds to the profits of the railroad company. Self-interest alone, apart from all other considerations, should induce us, and will induce us, and has induced us, to treat these men fairly and liberally. My whole object has been to establish kindly relations with them; it is so much to our interest to do so, apart from any other question of benevolence. But, I say to you, that it is almost impossible on account of the character of the political agitators who appear among them and represent themselves as their leaders. There, is, perhaps, no one who can say as truly as I can, in the language of the Psalmist, that "I labor for peace, but when I speak unto them thereof they make them ready to battle." You, gentlemen, sit here to-day as the representatives of the Commonwealth of Pennsylvania. You have heard the clamors of these agitators at your doors. You have seen them denouncing against us all the power of the State, which they profess to wield and to be able to control. You see in their papers to-day the most outrageous and infamous abuse of yourselves as a committee, simply because theevidence in this investigation has failed to substantiate the charges against us, and they see but to well that they will not be gratified by witnessing our destruction. Hence, you are denounced from one end of the Commonwealth to the other, and the abuse heaped upon us has been transferred to you. I ask you, gentlemen, to interpose between them and the real workingman—between the agitator and his victim. Which shall have your protection? Which is entitled to your sympathy? Is it he who receives a salary for no other purpose than to create dissension and organize riot—the man who lives off the toiling miners and deprives them of subsistence, or shall it be the honest workingman, anxious to make use of the strength which God has given him and desirous to labor for the support of his family? I am here to-day to present for your consideration a few plain facts and to endeavor by such poor arguments as I have the power to make, to warn you against the insidious influences of these self-styled representatives of labor; to ask you, in your capacity of legislators, to protect the real workingman, and to ignore and denounce those who thrust themselves between you and him. Advocates of the Commune and emissaries of the International, the success of their agitation in the State of Pennsylvania must be followed by the overthrow of the very foundations of society. I can do naught but raise my voice in protest against them, but you can do much. Let me beseech you to look well to it; for if you fail in this duty, the time may come when we shall have to defend with weapons other than arguments our firesides and altars.

Let me now draw a picture of what might be accomplished in the anthracite coal region—of what it has been a dream of mine to accomplish. Let me show you how, resulting from the fact that a railroad corporation is the owner of these mines and the employer of these men, the system of co-operation could be brought about in its fullest extent and under its most favorable auspices. The share capital of the Reading Railroad Company is only thirty-five millions of dollars. At rough figures, there are six million tons of coal produced in the regions that depend upon us for an outlet. The amount of money paid for the labor of mining this coal, and for the labor of preparing it, transporting it to market and shipping it, is in round numbers two dollars and a half a ton—say a dollar and a half for the mining and preparing, and a dollar for the transportation and shipment. There, is, therefore, fifteen million dollars per annum paid out in wages to the class of people who are employed in developing this industry. I speak within bounds, and from my own knowledge of what these men can earn, when I say that nearly twenty per cent. of their wages might be saved if they were economical, as many of them desire to be. Let us suppose, then, that one man might annually purchase one, two, three or four shares of the stock of the company of his employer; that these working-men, instead of pouring their money into the treasuries of associations which do them no good, but do them positive harm, should gradually become to a great extent owners of stock in the very company that employs them. We would like to see that accomplished; we would like them to become interested with us in the business that results from their labor. As you see yourselves, nearly three million dollars a year could be so invested, and in a very few years the laboring population connected with the coalfields and depending on the transportation of coal could become large owners of the stock of our company. Where in the wide world could there be a more perfect system of co-operation for the benefit of the employer and the employed than that in which the railroad corporation owns the railroad and owns the lands and employs the men to produce the coal, and divides the profits of its business among the laboring men whose toil has added to its wealth? I have thought of this often, and hoped at some time or other to bring it about; to see the company actually composed of the men whose labor produced the coal, with no middle interest, with no commissions, but the entire profit represented by the difference between the cost of production and the price of the product, divided *pro rata* among the very people whose labor and whose skill was required to produce it. But if I were to suggest this to the men, the agitators and demagogues would tell them that my only object was to break up the trades unions. I can see, however, how it could be accomplished; I can see how it could be carried out with great benefit to the laboring class; I can see that it would result in attaching them to us, and in making them share in our prosperity, in making them labor more assiduously than they now do, because over and above the wages they received for a day's work there would be an additional profit which would come to them at the end of the year. Each man, to some extent, therefore, would be interested; it would be to his pecuniary interest to see that there was no waste and no loss. He would feel as if he was working for himself; and such a relation between themselves and ourselves is the one we would like to bring about, and can be secured if this class of agitators, of Communists and Internationalists, of whom I have spoken, were either sent to the penitentiary or condemned to make their own living by an honest day's toil instead of passing their time in salaried ease by writing newspaper articles and making speeches in order to prevent their deluded followers from earning their bread.

Gentlemen, another reason why the coal trade ought to be made profitable, is the trouble and expense that results to the owner of coal property from the social condition of the coal region. The property is owned by non-residents; the taxes are levied by people who pay none themselves. You will be amazed when I show to you the enormous extent to which we are over-burdened with taxation. In one township in the coal region, the township taxes alone are two and sixth-tenths per cent. of the valuation, and the valuation is very high. In another it is two and a half, in another it is four and eight-tenths per cent. of the valuation; in another it is seven and one-tenth per cent. of the valuation of the property, and in another four and a half per cent., and these levies are only for township purposes and are exclusive of, and in addition to, State or County taxation. The system of political economy adopted in some of the townships in the coal region is the most successful and the most wonderful that was ever introduced in favor of those who levy the taxes and spend the money. A strike takes place; the men refuse to work, and instantly the directors of the poor levy a tax upon the property of the employer, and distribute the proceeds among the men who are on strike as "out-door relief."

I have here a list of what is expended annually for the repairs of the roads. In one township, last year, the annual cost of repairing country roads was $397 per mile. $397 per annum was spent upon the repair of a single mile of country road. In another it was $556 per mile; in another it was $430 per mile; in another it was $489 per mile; in another $475 per mile; in another $597 per mile; in another $545, and in another $415 per mile. This was the annual cost, last year, of repairing a mile of country road. We are subjected to these taxes; we cannot get rid of them. The inhabitants levy the taxes and spend the money, and all we can do is to pay. I tell you, gentlemen, that there is a "ring" formed in the coal townships of Schuylkill, Northumberland and Columbia Counties, compared to which the "ring" of WM. M. TWEED sinks into absolute insignificance. In one township alone, where they were compelled to build a poorhouse to prevent the outrageous system of so-called out-door relief, the cost of maintaining each pauper was $15 per week, the same price, I suppose, that I would be charged at the United States Hotel, in Atlantic City, for expensive summer boarding and lodging. This sum was spent in money, in addition to the value of the produce of the poorhouse farm. In Conyngham township, Columbia County, in 1873, there was expended on the repairs of sixteen miles of road, and in building one mile of new road, $46,344 03, making a cost for the annual repair of roads of about $2,725 per mile. Gentlemen, you have been over the Reading Railroad and have seen the solidity with which it is made and the care with which it is repaired, and when I tell you that the cost of repairing that road which carries more tonnage per mile than any other road in the world, together with the cost of the new iron that is annually put into it, and the cost of the new material, and the labor, and the maintainance, is only $930 per mile of single track, you will see that a mile of country road in Conyngham township cosst three times as much. We are subjected to all this taxation. You do not know, gentlemen, under what a grievous burden we have had to bear up. I have told you the annual cost of repairing roads; but that is nothing, for, as the taxes are not sufficient to pay the annual cost, there is an enormous debt run up every year for the surplus. In addition to this annual cost which I have named, the present debt of the townships I have referred to are as follows per mile of existing road. Remember, this is not the aggregate, but this is the debt per mile of road, One of them $53 a mile; another, $35 21; another, $185; another, $357 14. another, $56; and the township which expended over $2700 per mile in repairing has a debt per mile of $3612. That money is taken from us, and it goes to support a little clique in each township that controls the politics of that township and controls the work of the labor association, without the poor and honest and deluded laboring men knowing anything about it. We shall come to your doors next winter, probably, clamoring to you for an investigation, and, having been investigated ourselves, we shall ask you to direct your arrows against those who are now complaining of us. We will show yon a state of facts which you would hardly dream could exist in any civilized country—a system of robbery by taxation; a system where the supervisor employs his own carts on all the public roads; where every man connected with the administration of municipal affairs becomes wealthy, and where we non-resident, innocent, miserable, wretched property owners have to foot the bills and pay all the costs; and then, when we add two or three cents a ton to the cost of coal in order to save ourselves, the very men who are thus plundering the public appear before you at Harrisburg, and represent themselves as the advocates of the down-trodden laboring element, and threaten you with defeat at the polls if you dare do anything in our favor! Why, TWEED is almost an angel compared with these men. If you take the value of property, and the amount of taxation levied, as compared with the real and honest cost of the object to be attained, you will find that, in proportion to the amount, these men steel one hundred dollars where TWEED and his confederates took one; and if the same amount of robbery and iniquity were practised by the United States government as is practised in the coal townships, the national debt would hardly pay the interest upon the amount of annual expenditures.

I must now turn to another subject, and as I have an opportunity rarely enjoyed, of talking through you to the Legislature of the State of Pennsylvania, I will subject you to a further infliction, and make you, as it were, a vicarious sacrifice for the iniquity of the whole body you represent. I desire to call your attention to the manner in which you gentlemen of the Legislature have been deceived frequently, and to the unfair legislation with which you burden us. In the first place, a year or two ago, you levied a tax of three cents a ton on a ton of coal if it was sold by a corporation, but not if it was sold by an individual; and ,therefore, Mr. BORDA, in entering into competition with us for the trade in Philadelphia, has three cents a ton advantage over us. If Mr. BORDA's customer wants us to sell his coal he ought to have a right to come to us, because, although perhaps we have not the same amount of ability, we have a little more capital, and the producer ought to have the right of selecting his own factor. But when he comes to us to sell his coal he has to be taxed for the benefit of the State three cents per ton, and when MR. BORDA sells it it is not taxed at all. This is hardly fair. I admit that corporations ought to pay a large share of the burden of State taxation, and if the tax could be made so as to bear equally on all inhabitants of the State, it is as good a way as any to collect the annual rates; but to say to an individual who ships one hundred thousand tons of coal a year "if you go to a corporation to sell your coal, and sell it to them we will tax you three cents per ton, but if you go to an individual, we will not," I maintain, is manifestly unjust to the individual, to say nothing about the corporation—for we, as you know, never expect justice.

Again, you have been at the mines and have seen how coal is mined. Let me call your attention to a bill that was passed last year by which it was made the duty of every person employing men at coal mines to weigh the coal and pay his miners by weight. No working man wanted this. It was introduced, I think, by Mr. STANTON, of Luzerne, who said it was an absolute necessity. Of course, if it had passed in its original shape it would have destroyed the business of the region; but there was an amendment put to it by which it was not to be applicable to those who made a contract with their men to work otherwise. A great many of the coal operators in our region thought it was necessary that such contract should be in writing, and when their men were ready to go to work they presented a paper to them to sign. Workingmen always object to signing papers; they are always suspicious of written contracts. They did not want to be paid by weight, they could not be paid by weight, but they would not sign the paper, and in some cases they stayed out on a strike some days until the matter was explained. But they lost several days' wages. Why should

these troubles be thrown in between us and our miners? Most of the coal in Schuylkill County is mined by the yard, and it frequently has to remain in the ground from one to three years after it is mined, before it can be taken out; and if this bill was a law the poor workingman could get no wages until at the end of three years his coal could be weighed. It is impossible to weigh it as it is mined. He is paid so much a lineal yard for cutting the coal. When the vein is flat or is at a slight inclination, it is worked by the wagon, and the wagons can be loaded daily; but where the vein has a very steep inclination the man who cuts the coal leaves it in the breast or run. He leaves all the coal in the mine to support him and to stand upon as he works upward, and when he is done with his breast, at the end of three or six months, or a year, it is taken out; but sometimes the whole coal remains in the ground until the gangways are driven to the end of the line, which may occupy two or three years. It is sometimes two, or three, or four years before it could be weighed; and yet this bill actually passed through one branch of the Legislature without amendment, and would have prevented the miner receiving his pay except at the end of three or four years. I need not refer you to the bill which I now hold in my hand, and which passed one reading in the House, called the Labor-Tribune bill, by which all the industrial works of Pennsylvania were to be managed by, and to be subject to the control of, a Board called a tribune, composed of twelve men, of whom one was to be the secretary of internal affairs, one a coal operator, one a manufacturer, and the other nine laborers employed at such works; and the decision of this tribune upon any question of dispute was to be final, and if it was not obeyed the disobedient offender was to be imprisoned for seven years!

Senator HERR—That was thrown out of the Senate.

Mr. GOWEN—Yes; it was thrown out of the Senate, but the report of it went through the coal region like wild-fire; it was believed it would become a law, and the agitators thought their millenium had come at last. Indeed, many of the men in the coal fields were led to believe that the resolution passed by the Anti-Monopoly Convention at Harrisburgh were acts of the Legislature, and they wanted to know when they were going into effect. This constant and unnecessary agitation and disturbance in the relation of labor and capital is the cause of all the trouble we have to contend with.

With reference to the question whether what I have mentioned and what has been proved by the other side amounts to a conspiracy, it is enough to say that if it does you should send us to the District Attorney. But the case of *The Morris Run Coal Company vs. The Barclay Coal Company* has been cited. I do not desire to take up your time with it, but I will merely read to you the gist of the case from the syllabus and a quotation from the opinion of the judge to show what kind of a trade association it is that is indictable as a criminal offense:

"A restraint upon trade, to be valid, must be partial, the consideration adequate and not colorable, and the restriction reasonable."

"A good test is whether such restraint is such as only to afford a fair protection to the party in whose favor it is, and not so large as to interfere with the interests of the public." * * *

"The presumption is that restraints on trade are illegal, unless made upon adequate consideration and on circumstances both reasonable and useful." 18 P. F. SMITH, page 173.

And the opinion of an English judge is quoted as saying:

"We do not see how a better test can be applied to the question whether reasonable or not, than by considering whether the restraint is such only as to afford a fair protection to the interests of the party in favor of whom it is given, and not so large as to interfere with the interests of the public. Whatsoever restraint is larger than the necessary protection of the party can be of no benefit to either; it can only be oppressive, and if oppressive it is in the eye of the law unreasonable; what is injurious to the public interest is void on the ground of public policy." Ibid, page 185.

I leave this part of the case with you to say whether what we have done is injurious to public policy, or injurious to the Commonwealth of Pennsylvania. I call your attention to the fact that we never stopped the production of coal until we were blocked up and had to stop it. The remarks read from the report of the Managers of the Railroad Company, criticising the action of the Workingmen's Benevolent Association for stopping production in order to raise prices are perfectly just, and would be applicable to us ourselves if we were guilty of the same. But when did we ever stop production? or when shall we ever stop until we are required to do so by the impossibility of handling the product of our mines? You have it in evidence that the combination in New York adopted ten million tons as the amount to come to the competitive markets annually, and the largest amount that ever was required in one year was 9,100,000, and in the other 8,400,000. This was not limiting production. We did not bind ourselves in any manner to mine only ten million tons. When we met we assumed that figure for the purpose of making a *pro rata* distribution. The *pro rata* distribution was based on the exact tonnage which each of the companies had averaged in the preceding years. We stopped once in the month of January, when we elevated the road coming into Richmond. There was no scarcity of coal then. There is no demand for coal for shipment in winter. We selected the winter, when there was no shipping business, for the purpose of doing the work. The city of Philadelphia paid a portion of the cost; the company paid the other portion. Instead of having a grade-crossing with eleven tracks, we made the improvement which you saw, elevating the railroad and depressing the roadway beneath it. We stopped for two or three weeks to do that. We stopped once in a dull season at Port Clinton tunnel; but when we stopped, you have it in evidence that every place was blockaded. Richmond was full; the retail yards were full; the eastern depots were full; New York was full. We went on loading cars in order not to stop, if it were possible to avoid doing so. We loaded the cars as long as they lasted, until we had twenty-four miles of coal cars, loaded with coal, standing along the line of the road, and then we stopped; we could not go any further; and simply because we did not stop until we could not go further, and because we loaded these cars in order to give us an outlet for our product as long as possible, our friends turn round and say that we loaded the cars in order to stop! As I said before, the very thing which we do to benefit the public is made use of as evidence against us.

They say that it is a combination to keep up prices. Why, gentlemen, if we had kept up prices you would never have heard of this investigation. If, when the long strike of six months commenced, on the first of January last, and when we had three hundred thousand or four hundred thousand tons of coal on hand, and the retailers of Philadelphia had probably fifty thousand or one hundred thousand tons among them, we had united with them, and fleeced the public out of two or three dollars a ton profit (which we could easily have gotten, for coal was very scarce), they never would have gone to Harrisburg to ask for this investigation. It was only because we reduced the price of coal fifty cents; it was only because during a time when coal was scarcer than it ever had been before we refused to be tempted to raise the price, that these gentlemen complained against us. They did raise the price, but they tell you that they resisted temptation and only raised it to eight dollars a ton. They only made two dollars and a half when they might have made five. I remember to have heard of a person who claimed that he was a very religious man, and who, in talking to another about the evils of yielding to temptation, said that he always resisted it; that on one occasion he had been in a shoemaker's shop and had seen a handsome pair of boots hanging there; that nobody was looking, and the temptation was very strong for him to take them, but there was a voice within him which bade him beware, and he did not touch the boots, but only took a pair of shoes. And so our friends, the retailers, when they had the opportunity of raising the price of coal to ten dollars a ton in Philadelphia, only raised it to eight dollars, because we sold it at five dollars and eighty cents. Why, gentlemen if we and the New York companies had not insisted upon keeping down the price of coal you never would have been asked to make this investigation, and the poor people of Philadelphia would have had to keep themselves warm during the past severe winter with coal at ten dollars per ton.

I have said almost all that I have to say to you. We occupy a very peculiar position in this investigation. An interest known as that of the factors, driven absolutely out of business by sharp competition, comes before you to complain of us as a monopoly that destroys competition. The retail coal dealers, forced to reduce their price of coal by our competition, come before you to complain of us because we prevent competition. The same dealers, many of whom are engaged in selling coal at the rate of one thousand seven hundred and thirteen pounds to the ton, came before you to complain that we give short weight! Out of their mouths these accusers are condemned.

And now, before closing, I ask some little attention to that about which I have not yet spoken, and that is the character of the company that you are asked to strike down, and the benefits that its business confers upon the community.

You are asked to take our charter away because we have become injurious to the Commonwealth of Pennsylvania. Gentlemen, the two companies which I represent employ to-day 22,546 persons, all residing within the State of Pennsylvania. We pay to them monthly, when we are in full operation, the sum of $988,659 for wages. We have expended in the last five years in the purchase of materials $23,012,140 50. It is an inflexible rule of the company never to buy a dollar's worth of material from anybody away from the line of the road if it can be bought from those living along its line. The manufacturers in Philadelphia, and residing at other places along the line of the road, receive our orders to the exclusion of everybody else. We have paid in five years to the State of Pennsylvania as taxes the sum of $2,789,070 30, in addition to United States taxes and to local and municipal taxation. We are working seven hundred and twenty-five miles of railway within the Commonwealth of Pennsylvania, representing one thousand four hundred and fifty miles of single track. We transported last year 6,348,812 tons of coal; we transported 3,098,831 tons of merchandise; we carried 6,964,869 passengers within the State of Pennsylvania safely over the lines of our railroad, without injury of any kind to a single one of them. I can speak, with some degree of pardonable pride, at the end of this investigation, of the personal character of the employees of the Reading Railroad Company. Many of them were before you. You saw them in the coal regions; you saw them in Philadelphia; you saw them at the shops of the company. We invariably promote our own employees; we never take a stranger into our employment, if the vacancy can be filled by the promotion of a person already in the service of the company. Some years ago, when the secretary of the company, who was receiving a salary of $6,000 a year, died, the only person taken into the service was a boy, at a salary of two or three hundred dollars, and there were some fifteen or twenty promotions, and every vacancy, except the lowest, was filled by the promotion of a person already in the service of the company. Our employees remain with us almost to the end of their career, and when worn out in our employment we invariably give them a pension. There is not in the pay of the Reading Railroad Company, with all its staff of officers and army of employees, to my knowledge or belief, a single man deriving one penny of profit from the prosecution of any business connected with the railroad company, or which depends upon the railroad company for its transaction—not one. Do you ever hear of any person connected with the Reading Railroad Company making an exhibition of wealth, or of fashion, or of folly? Gentlemen, I tell you, in all earnestness and sincerity, that I believe the mere fact that a man is an employee of the Reading Railroad Company is of itself sufficient to secure him employment in any other place where the Reading Railroad Company is known. Do you ever see a man connected with the company loaded with diamonds, driving fast horses, or indulging in dissipation, or making an ostentatious display of wealth? Do any of them look like men of that character? I must stand here before you to say something in favor of these men; for if we have been guilty of the charges made against us—if we have been guilty of this meanness whereof we are accused, the hand that turned the false balance, and the hand that made the unjust discrimination, and the mind that directed it, were those of the men who have appeared before you, and who are the representatives of the company. I stand here to-day to defend them from any such accusation, and to say that, though wearied with the position I occupy, disgusted with the notoriety attached to it, and yearning for the peaceful and quiet paths of my old profession, I am proud, and can never cease to be proud, of being at the head of the body of men in the employ of the Philadelphia and Reading Railroad Company.

Why should this company be singled out from among all the corporations of the Commonwealth, and subjected to an inquisitional investigation? Did you ever hear it charged that the hand of an officer of the Reading Railroad Company was stained by offering a bribe, that any of its officers are tainted with the spotted infamy or covered with the loathsome leprosy of those who betray a public trust? Have you ever heard aught against the personal character or the integrity of those to whom the charge of this property has been committed? Do you believe from what you have seen that these men, these officers, these subordinates, these masters, and clerks, and station agents, and superintendents, whom you have had before you, are the men who would have been guilty of the meanness of the offense with which they are charged? What you may say upon the general questions connected with public policy is for you to determine. You have heard my answer. Whether it has affected your mind, given you any new light, or opened any new view of the future, is for you alone to say. But that you will make a report, charging these gentlemen with being guilty of giving false weights, with being guilty of unjust and dishonorable discriminations, I submit that you cannot find it in your consciences to do. To protest against this is all that I now stand here for. If it had not been for this, I might have suffered under your investigation in silence; but I cannot, I will not—nay, I dare not, remain silent under a charge that effects the integrity of those who look up to me as their leader, and are entitled to my poor services as their defender.

List of Outrages in Schuylkill and Shamokin Regions.

1874.

December 13.—JOHN TAYLOR, inside foreman at Richardson colliery, received a threatening notice to leave. See notice marked "A." GEORGE ROSE, watchman at Indian Ridge, warned by two strangers not to go down the shaft of the colliery to grease the pumps, as in their opinion it was not his duty, but that of the fireman.

December 28.—Communication marked "I" was received by Mr. J. H. OLHAUSEN, Superintendent Mahanoy and Shamokin branch.

1875.

January.—Three tunnel contractors at Preston No. 2 colliery, JOHN FINIGAN, SAMUEL DAVIES, WILLIAM WILLIAMS, were notified to cease driving a tunnel, or submit to a fine of $50 each, imposed by the Miners' and Laborers' Benevolent Association.

January —JOHN LAUSS, a teamster at Bast colliery, fined $10 per week by the Miners' and Laborers' Benevolent Association for continuing to work after being notified to stop, and upon a refusal to pay the fine he was expelled from the association.

February 14.—About four o'clock in the morning the shaft frame at the West Norwegian shaft was destroyed by fire—the work of an incendiary.

February 24.—A mysterious fire occured at the East shaft about nine o'clock at night, originating in the fan house, where there was kept a limited quantity of giant powder; there being no fire near at hand at the time, no cause can be given for the fire other than that of incendiarism.

February 26.—Burning of giant powder at the Norwegian shaft; supposed to have been the work of an incendiary.

February 28.—House burned down by parties unknown, at Richardson colliery.

March 19.—J. SHOWERLEY, watchman at Ellsworth colliery, beaten and his revolver taken from him.

March 19.—Communication marked "III" was received by Mr. OLHAUSEN.

March 20 —Watchman at Minehill Gap colliery beaten and tied with a rope; watch stolen.

March 19 and 20.—All employees of the company in the transportation department who were members of the M. & W. B. Association were suspended from duty and informed that they would not be reinstated unless they withdrew from that organization.

March 22.—No coal trade moved to-day on laterals on account of men refusing to comply with the company's conditions; shops in coal region also closed for same cause. Passenger and freight trains running as usual.

March 23.—Roadway repair-men working between Landingville and Mount Carbon quit work, upon being directed to do so by officers of the M. & W. B Association.

March 24.—There being no disposition on the part of the men to conform to the requirements of the company, others were sent from Reading to run on coal trains and to work Gordon Planes. Accompanying them, for protection, were thirty-five policemen. A few loaded cars were hoisted over planes.

March 25.—Train employees of the Philadelphia and Reading Railroad Company quartered at Ashland were molested by parties of men. These persons endeavored by threats and persuasion to intimidate the men and induce them to leave the service of the company.

March 25.—Telegraph office at Locust Summit destroyed by an incendiary.

March 25.—Thirty-two cars loaded with coal dumped on track at Locust Gap, and six at Excelsior.

March 25.—A train of 100 loaded cars were started down the grade and run off the track on Excelsior branch. Eight of the cars were badly broken in consequence. Damage, $300. A few men at Palo Alto renounce the M. & W. B. A.

March 26.—Philadelphia and Reading Railroad Company engine, No. 288 ran off track at Minehill crossing.

March 25.—Unknown parties dumped 29 loaded coal cars on siding at Locust Gap Junction.

March 26.—Six loaded coal cars dumped by unknown parties at Enterprise siding.

March 27.—Train hands on Philadelphia and Reading Railroad Company's train stoned at Locust Gap. A number of men sent from Reading were met on their arrival at Gordon by a party of persons and persuaded not to go to work.

March 28.—Warehouse Philadelphia and Reading Railroad Company at Mount Carmel broken open and 3 barrels flour, 600 pounds fish, and 1 barrel butter stolen. Tool house broken open and tools stolen.

March 29.—A large number of persons congregated at and near Locust Gap and stoned the crews of passing coal trains.

March 30.—Switch turned wrong and spiked at Shenandoah Junction; mixed train engine off the track in consequence.

March 30.—Tool house No. 5 broken open and tools stolen. Notice left there addressed to DANIEL YOST, boss of section. New men were threatened and left, saying they were afraid to work. Miners' and Laborers' B. A. and Mechanics' and Workingmen's B. A. in joint meeting formed an alliance. See notice marked VI.

March 31.—House car burned and totally destroyed on siding at Excelsior. Loss, $600.

March 31.—A party of men boarded a coal train between Locust Gap and Alaska stations, drove off the engineer and crew, damaged the engine, and blocked the road with stones.

March 31.—Parade of miners and railroad men at Gordon. A large number of miners from Hecksherville, on way to Gordon to participate, took possession of coal trains, and on arrival at head of plane, compelled the plane hands to run them down to Gordon. The men employed at the planes were also notified to quit work or abide the consequences. The strikers stated that after the parade they would go through the shops and compel all the men to quit work, which, no doubt, would have been carried into effect had it not been for an accident which occured, resulting from the premature discharge of a cannon which the strikers were using to fire a salute, and by which three men were injured; one of them fatally. Track barricaded near Locust Gap with stones and railroad sills, train men stoned and shot at by parties with muskets and other firearms. The mob took possession of engine No. 260, pointed a revolver at the head of the engineer, HIRAM TROUT, and told him to clear out or they would blow his brains out. Engine No. 260 was left in the hands of the mob; three engines following, having been warned of the trouble ahead, returned with their trains to Alaska. They were, however, together with train No. 260, subsequently brought safely to Gordon. Damage sustained by engine No. 260 at the hands of the mob was $75. A large and excited mob awaited the arrival of the train men at their boarding house in Ashland, and this, together with the previous occurrences of the day, rendered it necessary to withdraw the men from the region until other arrangements could be made.

March—Indian Ridge and Plank Ridge Collieries. Threats made by strange men at two different times to burn breakers of the company if work was not soon started. Governor HARTRANFT consulted.

April 1.—No movement of coal trade to-day. Company's property guarded by police force. Sheriff WERNER, of Schuylkill County, applied to for protection.

April 1.—Threatening notice posted at COLKET & NEWKIRK Collieries. See notice marked B.

April 1.—Repair-men THOMAS CATALOW, HENRY FULKE and PHILIP BLAKE, on Preston branch, Mahanoy and Shamokin railroad, threatened with violence if they did not quit work.

April 2.—Switch lock broken and switch misplaced near Mahanoy City, throwing freight train off track and engine and portion of train down the bank.

April 2.—Engine No. 237, on freight train No. 11, was run over an enbankment at Elmwood colliery, a switch having been misplaced by some unknown person. Damage $110. Sheriff WERNER distributed his proclamation through the riotous region. Governor HARTRANFT also issued his proclamation.

April 2.—A large party of men and boys boarded a freight train at Mahanoy City in defiance of the crew. They were driven off by aid of Sheriff WERNER and police force.

April 2.—An attempt made to burn the office of the Philadelphia and Reading Railroad Company at Tuscarora.

April 2.—JOHN STEPHENS, a brakeman, living at Mahanoy Plane, shot at and stoned for refusing to unite with the strikers. The Sheriff of Northumberland promised to be at Locust Gap next morning. No movement of the coal trade.

April 3.—Twelve empty coal cars run off the track by unknown persons at Hillside Colliery. Damage $25.

April 3.—Two freight cars run off the track at Ellangowan Colliery by unknown party. Damage $2018.

April 3.—Men were sent from Reading to resume work at Gordon Planes and on coal trains. Two hundred and seventy cars hoisted over Gordon Planes. Hotel keepers in region would not accomodate all the men sent; an extra train was therefore provided to run daily between Reading and Gordon for their accomodation.

April 6.—Tool house at Locust Gap thrown into the creek.

April 6.—A few more men renounce their association at Cressona and report for duty.

April 7.—A piece of iron was found wedged in a frog on main track east of Mahanoy Plane. Discovered in time to prevent damage.

April 7.—A loaded car at Burnside Colliery siding was started down the grade by parties unknown.

April 7.—A pistol notice was fastened to blacksmith shop at Newark Colliery. See notice "C."

April 8.—Attempt made to run loaded cars down the grade at Burnside Colliery.

April 12.—A car started on Hecksher branch, near Shenandoah, running down main line of Shenandoah branch, about the time the passenger train from Mahanoy Plane to Shenandoah was due.

April 12.—Switch and two caution boards torn out at Wadesville, Mount Carbon railroad.

April 12.—A half drift wagon wheel placed between two sills on the track at Horseshoe curve, Minehill railroad.

April 15.—Switch lock broken at Glendower, Minehill railroad.

April 17.—Block of houses at Bast Colliery burned by parties unknown.

April 18.—Two mules stolen from stable of the West Shenandoah Colliery, found the next day near Conner's mines.

April 21.—Men about starting to work in Greenback Colliery deterred by threats and abusive language.

April 19.—Tool house No. 6, above Landingville, was broken into, tools taken out and thrown down the bank, and the hand-truck at tool house was disposed of in the same way. WILLIAM TIMMINS, BENJAMIN GOUGH, JOSEPH GOUGH, West Shenandoah Colliery, were intimidated and stopped from working by a party of men, and again, on May 13, were told by them that they would be reported to the M. & L. B. A., and be fined $50.

April 22.—Hose of water columns at Mahanoy Plane, Gordon, and Excelsior cut.

April 22.—Two gondola cars, loaded with ties at Excelsior, set on fire.

April 22.—Switch at Enterprise Junction set wrong and rails blocked; obstructions removed before damage resulted.

April 22.—Special policeman DOOLAN, while in discharge of duty on train, attacked by five men, thrown from the train and severely beaten.

April 23.—Two railroad employees, FRANK BACKMAN and OWEN LAWRENCE, having resigned their connection with their union and agreed to go to work, their houses were visited by strikers, shots fired and threatening language used to stop them from working. Rev MR. O'BRIEN, who has pastoral charge at Hecksherville, promised to use his influence to prevent any further interference with our men as far as his charge extends, and also said that on next Sunday he would fully instruct his people. He seemed to be confident that matters could be arranged satisfactorily, and police force was therefore withdrawn from Mine Hill Railroad south on following day.

April 28.—House of CHRISTIAN CALLEARY, miner, at Bast Colliery, stoned, windows broken and damage done to furniture.

April 29.—Freight depot at Mount Carmel broken into and provisions stolen.

April 29.—Three pistol notices posted at North Franklin Collieries, where men were working at reduced wages See "D," "E," "G."

At different times during April, the following men, working at the North Franklin Collieries, were subject to abuse, and their houses stoned and furniture damaged by strikers:—PETER HOFFMAN, abusive language used and windows of house broken: HENRY LAGERMAN, Sr., windows broken; HENRY LAGERMAN, Jr., abused; PETER STRASSER, windows broken; DAVID STRASSER, windows broken; HENRY RHOADS, abused for working; ELIZA D. JONES saw and heard parties planning to burn the breaker.

May 1.—Freight car at Locust Gap broken open and flour and feed stolen to the amount of $35

May 2.—The houses of men at Gordon, who had left the Miners' and Workingmen's Benevolent Association and gone to work, were visited at night by parties, threats made and shots fired.

May 3.—Freight cars started from siding at Mahanoy City by some persons unknown, and run off the track at main road switch.

May 3.—Obstructions placed on track below Girardville.

May 3.—Engine "Gem" was stoned while passing through Girardville at about nine P. M.

May 4.—Ben Franklin Colliery burned; the work of an incendiary.

May 4.—A watchman and two other men at Helfenstein Colliery driven off by an armed party.

May 4.—Watchman at Locust Gap beaten and watch stolen; watch returned.

May 5.—Oil house at Locust Summit, used as a temporary telegraph office, burned.

May 5.—Stable at Locust Spring Colliery robbed of thirty bushels of corn and oats.

May 5.—Heavy wire rope at Gordon Plane No. 1 cut. Loss about $500. Telegraph office at Locust Summit again destroyed by fire. Loss, $250.

May 6.—Attempt made to destroy the trestles at Locust Gap by boring holes in the timbers and charging them with dualin. GEORGE KEICH and WENSCLE, working at Newkirk Colliery, were told that it was a pity they were not both killed, and if they were not careful, they would be attacked on their way home.

May 7.—At Excelsior Summit, Locust Gap and Garretson's, the hose was cut from the water columns and tanks by unknown persons.

May 9.—Breaker of Enterprise Colliery destroyed by fire, supposed to be the work of an incendiary.

May 10.—A mob of about 250 armed men stopped the men who were about to work at Hickory Ridge Colliery, maltreating the mine boss. Same party drove off the workmen at the Lancaster Colliery. An incendiary noticed served on a man at a Mount Carmel Colliery. Notice marked "F." CHARLES SHAFFSTAL, West Brookside Colliery, threatened and abused with bad language at Tower City for working.

May 11.—Assistant Foremen HENRY LLOYD, at Beechwood Colliery, badly beaten by strange men

May 13.—Stones, logs, &c., placed on track between Mahanoy City and St. Nicholas.

May 14.—MICHAEL LAFFY, a workman at Beechwood Colliery, fired at on his return home from work.

May 18.—JOHN VEITH, district superintendent at Locust Gap, house stoned and window broken.

May 19 —Signal tower at Mahanoy Plane, east of Bear Ridge Colliery, No 2, burned at four o'clock A. M.

May 19.—Ticket and telegraph office at Excelsior Station burned at about two A. M.

No Date.—GEORGE WOERT worked at East Franklin Colliery, but was so abused by being called blackleg and other names, that he was obliged to stop work and move his family to Tremont.

May 20.—A party of about twenty strikers attacked men working at Newkirk Colliery. Two of the workmen wounded.

May 25 —Carpenter shop at Palo Alto broken into, and a lot of tools to the value of $35 stolen. Railroad iron and sills were placed upon the track at two points between Excelsior and Shamokin, by some unknown person, supposed with the intention of throwing passenger train from the track. The obstructions were removed by the engine attached to passenger train, without damage.

June 2.—Obstructions were placed upon track on Shenandoah branch by some persons unknown, with the intention or throwing passenger train from the track. The obstructions were discovered and removed before arrival of the train.

June 3.—Engine "Gem" conveying Mr. J. H. OLHAUSEN, Superintendent, was fired at when near Mahanoy City by some persons unknown. No injury sustained.

June 3.—In the morning, about 7 o'clock, a large body of men, estimated to be from 500 to 100 in number, from Hazleton and vicinity, made their appearance in the neighborhood of Mahanoy City and stopped the men working the North Mahanoy, Primrose, JONES, WARD & OLIVER'S, Beaver Run and Hartford collieries. About 12 o'clock, a mob of men from Shenandoah and other localities in this region, numbering about 1200, marched through Mahanoy City. Their first act was to demand the release from the lockup of a man who had been arrested in the morning by the chief burgess; this they effected by paying the fine. At two o'clock, several hundred of the mob gathered at the colliery worked by KING, TYLER & Co. and compelled their men to quit work. Sheriff WERNER ordered the rioters to disperse, and was reading the riot act when he and his posse were fired upon by the rioters. Two policemen of the Mahanoy City force were slightly wounded. After this attack, the mob marched to St. Nicholas Colliery and dispersed. Governor HARTRANFT, having been called upon, ordered companies of troops to Mahanoy City and Shenandoah to protect lives and property. On the morning of the same day (June 3), a large body of men gathered about the West Shenandoah Colliery, threatening to stop the men working there, but were prevented from making an attack by the force of armed police under JOSEPH HEISLER. An attempt was made to throw the night passenger train to Shenandoah from the track by obstructing the road with stones, but the attempt was discovered in time to prevent an accident. A party of about thirty men, toward evening, while still daylight, went to the colliery worked by WILLIAM SCHWENCK, near Mount Carmel, and deliberately fired the breaker, standing around until it was consumed. The colliery had worked since June 1 at reduced wages.

June 4.—Just before daylight a body of men fired upon the police guarding the Centennial Colliery, near Shenandoah, but their fire being returned with effect, they dispersed without further attempt. A party of men left St. Clair in the morning, going in the direction of New Castle, stopped the men working for JOS. DENNING, screening coal banks, and also the men working at Ellsworth Colliery. In the afternoon, a party visited Mine Hill Gap and Beechwood Collieries, but did nothing aggressive.

June 8.—Some of the men going to work at the Locust Run Colliery were driven back by a mob. The same day the party molested the platform men at Locust Run Colliery and drove two miners home.

June 9.—One of the workmen at Eagle Hill Colliery attacked by two discharged men.

June 12.—About half-past three o'clock P. M., ROBERT GILGORE and JAMES O'LEARY, contractors at the Oakdale Colliery, left the mines to return to Forestville, their residence. As they were crossing the mountain lying between Oakdale and Forestville, they were fired upon from the bushes by three men armed with shot guns. O'LEARY was shot in the arm in three places; GILGORE received a great number of shot in his arms, hands and lower limbs. The persons who made the attack were unknown to GILGORE and O'LEARY.

June 28.—About five o'clock in the morning, WILLIAM THOMAS was attacked in the stable of the Shoemaker Colliery, near Mahanoy City, by seven strange men, firing at him several times, striking him in three places, in the neck, leg and about the front of the body. During the firing a horse was killed and a mule was shot in the leg. THOMAS' injuries were not dangerous. JOHN BLAIR, engineer, and THOMAS CHAPMAN, stable boss, were in the stable at the time.

July 4.—At the Centralia Colliery, the night engineer of pumping engine was fired upon by two men from door of engine house, but was not injured. The two former engineers, JAS. MCBRAERTY and PATRICK DEVINE, had struck against a reduction of wages, and the man fired at had taken one of their places.

July 6.—About 2½ o'clock in the morning, Police Officer FRANK YOST, of the Tamaqua police, was shot by two men in Tamaqua. He lived until about ten o'clock that morning. Officer MCCARON, who was standing across the street, fired at the men, but hit neither of them. At the time YOST was shot he was on a ladder, at a lamp-post, turning off the gas. The night was very dark.

July 15.—Another attempt was made to assassinate WILLIAM THOMAS. He had just got into a passenger car at the Lehigh Valley Railroad depot, at Mahanoy City, for the purpose of going home to Shoemaker's Colliery, when he noticed several rough-looking men watching him. Immediately surmising their object he started to go out of the car, the train just leaving the depot, and, as he jumped from the car, a shot was fired at him from the platform, but without effect. This party were also strangers.

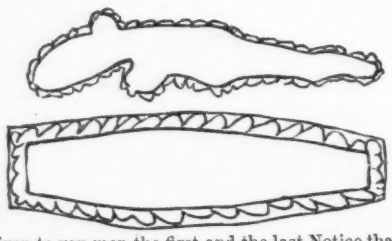
"A."

MR. JOHN TAYLOR—Please leave Glen Carbon or if you dont you will suffer; by order of the B. S. H. We will give you one week to go but if you are alive on next Saturday you will die: Remember and leave. (No signature).

"B."

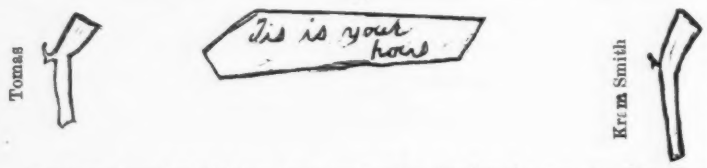
Now men i have warented ye before and i willnt warind you no mor—but i will gwrintee yo the will be the report of the revolver.

"C."

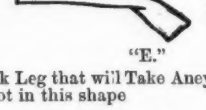


Notice is here given to you men the first and the last Notice that you will get for no man to go Down this slope After to Night if yo Do yo Can Bring your Coffion Along With you for By the internal Crist We mean What this Notice says you Drift man stop at home and Cut no more Coal let him go and get Coal himself I Dont mean Engineer or firemans let them mine their one Work now men the Next Notice you Will get I Dont mean to Do it With my Pen I Will Do it With that there Rolver I Dont Want no more Black legs at this Collary. (no signature.)

"D."



Notice you have Caried this as far as you can By cheating thy men you three Bossess Be Careful if the Above dont Be your home in A short Time

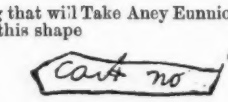


From a Stranger
he nowes you

"E."

Take notice Aneny Black Leg that will Take Aney Eunnion man Plac will have a hard Road to travel you will Rot in this shape

if you wish to
Escape this home



Coal

by a stranger.

"F."

If Thomas Martin Dont Stop we will burn down his Breaker. No signature.

"G."

NOTICE.

Any blackleg that takes a Union Mans job while He is standing for His Rights will have a hard Road to travel and if He dont he will have to Suffer the consequences.

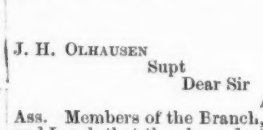
BEACHER AND TILTON.

"H."

NOTICE.

Any man Starting to Work on the rail road now going to begin under the basis will have to Stand the consequnces. So black legs to notice.

M. M. N.



Black Legs Take Notice—
that you are in danger of your Life by working in the mines without the Consent of the union men of Swatara Branch 14 Dis

at Middle Crick mines.

I.

Frackville Dec. 28, 1874.

J. H. OLHAUSEN
Supt
Dear Sir

At a special meeting of Branch No. 3 of the M. W. B. Ass. Members of the Branch, comprising the whole working force of the Road Plane and Level, that they have decided to quit work at 6 P. M. New Year eve for to attend their first Annual Ball. Hoping that you will arrange accordingly with this committee who will present you. with this copy.

I remain Yours truly

W. F. PAYNE Prest
CHAS. HARTSOG Secty

II.

Gordon Feb. 9, 1875.

The employees of gordon members of the M. W. B. A. of gordon do petition officers of the M. H. M. S. division to grant us the privilege of going to work at 7 o'clock A. M. but no later than seven but are willing to go to work before seven if the officers want us to do so 2nd that when engine or crew goes out at 7 o'clock A. M. and comes in at 6 o'clock P. M. that they receive a day for it the same as they get on other parts of the division 3nd when an engine with a regular crew is sent to work on another part of this division the crew belongs to said engine to go along with her for it has been a practice when an Engine was wanted at Shamokin and other parts of the division the engine was sent and the regular crew of said engine had to lay off the employees at gordon do ask as a favor the officers of this division to have those matters settled we remain Respectfully your Committee.

P. H. NOLAN T J. SMITH
C. A. MILLER C. S. WILSON

III.

Moh Plane Mar. 19, 1875.

J. H. OLHAUSEN Supt

The following resolution were passed by Branch No 3, of M. & W. B. Ass. That all Branches of Industry cease work to-morrow morning Sat. Mar. 20 | 75 and will not work till such members as were discharged are reinstated

By order of the Branch

CHAS. HARTSOG.
Secty

IV.

(Notice found posted at Locust Summit, Mar. 31, 1875.)

NOTICE.

Mr. Black-legs if you dont leave in 2 days time you meet your doom their will Bee an open war.

imeateatly

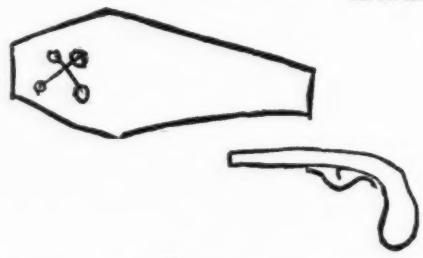
V.

(Notice found in yard of D. PATCHEN, engineer, Cressona.)

from the gap Daniel PATCH

remember you will be running in this coal ragion at night you took another mans engine we will give you fair warning in time and some more. V. L.

M. M. H. S. T.



VI.

we hear notify you to leave the Road for you took a nother man chop take a warning to save your life

to Yost

Notes.

Denver and Rio Grande R. R.—The amount of coal carried over this road during July was only 123 tons, which is accounted for by the fact that 40 miles of the roadway and 39 bridges had been washed away, causing a delay of 29 days.

The San Francisco Mint coined, in April, $3,458,000, of which $2,500,000 was gold, and $898,000 silver. During the first four months of the current year, the total coinage of our Mint was $10,036,000. The Carson Mint turned out $394,000 in April.

The Cumberland Rolling Mill.—The puddling mill and bar-mill of the Baltimore and Ohio Railroad Company's iron-works in this city are being operated on "half-turn" or day work. Operations in the rail-mill will be resumed on Monday, and in the top and bottom mill on Monday, the 16th instant.—Cumberland *Times.*

The coal dealers of Cleveland, O., have formed a coal exchange, for the more thorough and expeditious transaction of business, and to secure harmonious action upon all questions demanding a change of method, change of rates, or in any way entering into intercourse with producer or consumer.—*Manufacturing and Trade Review.*

The Cleveland, O., Rolling Mill Company are carrying out their intention of making steel boiler plate by having erected two Martin-Siemens furnaces, of seven tons capacity each. Their plate mill is regarded as one of the best in the country. Their old bar mill is to be enclosed under a new iron building which will consume six hundred tons of iron.—*Manufacturing and Trade Review.*

The Amalgamation Works at Georgetown, Col., are doing better at present than at any period during the year. The Judd works, at the head of the town, are turning out bullion at the rate of nearly $500,000 per year, and only require a good and continuous supply of ore to maintain that standard. A very large quantity of low-grade ore is now coming into market, while the production of shipping grades is not so good as it was 60 days ago. This is a satisfactory state of the market for the amalgamators. *Ex.*

The Storage of Petroleum by Submersion is suggested by a MR. MAX GESSI of Antwerp. He proposes to substitute corrugated sheet iron barrels for the wooden vessels now in use, and that these should be submerged in docks especially constructed for the purpose, fifteen or twenty feet beneath the surface of the water. For the use of the retail dealers it is proposed to have cisterns of the same metal, to be sunk four or five feet deep under ground in the street, yard, or cellar. The cistern could be filled with a pipe furnished by a safety-valve, and a pump could be employed to draw out the oil in quantities required. It is thought that this method of storage would not only confine any smell from the oil, but, by its isolation, would greatly diminish the danger from fire.

The Report of the Philadelphia Mint for the fiscal year closed on the 30th of June 1875 shows a very satisfactory state of affairs in that important institution. The total amount of gold operated on by the melter and refiner during the year was 742,003,276 standard Troy ounces, valued at $13,804,712 11. The amount of wastage in operating on this was 87.003 ounces, valued at $1,618 66, while the legal allowance would be 742,003 ounces, one thousandth of the whole amount so that the actual loss was only about one-ninth of that allowed by law. There were also operated on 6,387,803.92 ounces of silver, valued at $7,947,501 22, with a wastage of 476.63 ounces, or about one-twentieth of the legal amount. The coiner operated on 686,873.12 standard Troy ounces of gold during the year, valued at $13,011,592 03. His loss was only 19 59 ounces, or about one-seventeenth of his legal wastage. He also operated on 5,990,918 09 ounces of silver, valued at $7,453,708 57, with a loss of 954.49 ounces, or about one-sixth of the wastage allowed by law. This is said to be the best showing that has been made by the old parent Mint for the last twenty-five years, and proved with what care the opertions are conducted, and the perfection which has been reached in the processes of separating and refining the precious metals.

Soapstone.—The various uses to which soapstone is put, and the ease with which it is worked, have developed an extensive business both in quarrying and manufacturing. There are certain purposes for which this material seems peculiarly adapted; among the most prominent are stationary wash-tubs, sinks, stoves, stove-linings, boilers for laids, wash-bowl tops, register frames, griddles, dish heaters, foot warmers, hair curlers, &c. The best soapstone in the United States is found in New Hampshire and Vermont, where it is quarried in blocks weighing from two to ten tons. Its appearance and properties are familiar to most people It is a magnesian mineral, usually of a grayish hue, but is frequently almost white, and sometimes yellow, its texture and color varying according to the percentage of silica which it contains. Its peculiar properties are resistance to heat and insensibility to the action of acids. Wash-tubs made of soapstone are not in the slighest degree affected by hot or cold water, never crack or leak, can be wiped perfectly dry, and are always clean and sweet. The name *soapstone* is given to this substance not because of any detergent qualities it posesses, but because of its softness and peculiar oily feeling when handled. It is entirely without cleavage, and in this respect is the very reverse of slate, which is chiefly valuable by reason of its laminated nature. Soapstone is easily worked up into any form with saw and chisel. The dust is made use of by shoemakers in facilitating the ingress of a hot, moist, swollen, number nine foot into a narrow number seven boot. It is also used in combination with other ingredients for roofing material.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Aug. 7:

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co.	50,237	1,899 865	33,409	1,422,824
D. L. and W. RR. Co.....	75,662	2,064,247	36,094	1,480,703
Penn. Coal Co	29,563	787,231	29,392	758,764
L. V. RR. Co.....	21,770	526,618	14,167	593,949
P. and N. Y. RR. Co	2,152	68,456	937	37,225
C. RR. of N. J	42,638	526,867	41,902	782,657
Penn. Canal	14,182	79,277	7,928	178,199
Lack. and B. RR.....	..	81,493	..	112 529
	245,204	6,034,051	163,829	5,3[illegible]7,150
Lehigh Region.				
L. V. RR. Co	83,238	566,607	58 397	1,871,956
C. RR. of N. J.....	28,343	175,244	23,318	617 670
D. H. and W. B. RR.....	2,409	44,373	1,309	20,806
	113,990	785 624	83,024	2,510.432
Schuylkill Region.				
P. and R. R. RR. Co	168,711	1,709,166	138,473	2,838,423
Shamokin and Lykens Val	35,118	708,284	24,808	517,660
	203,829	2,417,444	163,281	3,350,083
Sullivan Region.				
Sul. and Erie RR. Co.....	..	5.557	525	21,443
Total.....	563,023	9,242,679	410,659	11,255,109
Increase.....	152,364	..	..	..
Decrease.....	..	2,012,429	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Aug. 7, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb.....	48,903	1,329,348
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb.....	7,190	181,110
Broad Top Region, Pa.		
Huntingdon and Broad Top RR.....	4,893	132,002
*East Broad Top.....	414	26,840
Clearfield Region, Pa.		
*Snow Shoe.....	491	40,697
*Tyrone and Clearfield.....	8,248	485,388
Allegheny Region, Pa.		
*Pennsylvania RR	1,524	138,688
Pittsburgh Region, Pa.		
*West Penn. RR.....	2,113	124,882
*Southwest Penn. RR.....	60	5,092
*Penn. & Westmoreland gas coal, Pa. RR.	10,724	342,052
*Pennsylvania RR.....	3,859	231,383
Kanawha Region, W. Va.		
†Chesapeake and Ohio RR.....	3,427	96,038

* To July 28. † To July 31.

The Production of Coke for the week ending Aug. 4.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield.....	..	273
Alleghany Region.....	..	53
West Penn. RR.....	1,178	30,229
Southwest Penn. RR.....	4,388	303,556
Penn. & Westmoreland Region, Penn. RR.	704	18,223
Pittsburgh, Penn. RR.....	540	59,088
Total.....	6,810	411,422

Bituminous Coal Production to Aug. 1st, 1875.

The following does not include the total production, but such quantities as have been reported to this office:

Pennsylvania	5,290,748
Ohio	314,013
Maryland	1,134,098
Illinois	467.920
Indiana	26,041
Iowa	50,381
Wyoming.....	80,346
West Virginia	80,325
Tennessee.....	43,087
Alabama	28,269
Colorado.....	12,504
	7,827,732

The receipts at Port Richmond for the week were 85,000 tons, shipments 80,000 tons, and balance on hand 55,000 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 63,485 tons.

The Exports of Coal from Baltimore for the week were 000 tons, and for the year, 29,411 tons as compared with 56,210 tons to the corresponding time in 1874.

The receipts at Buffalo, via L. S. and M. S. RR. for the week were 1,760 tons. The exports by Lake were 20,768 tons, and imports 1,001 tons.

Belvidere Delaware RR. report:

	Week.	Year 1875.	Year 1874.
The receipts of coal at Coal Port (Tr'ton)	9,225	39,686	165,693
" " " South Amboy....	13,003	63,785	403,660
Shipments of Coal Port (Trenton).....	9,395	36,574	165,826
" " South Amboy.....	8,409	124,792	379,398

Receipts of coal at Boston, for week ending July 30, and year from September 1st, 1874.

From	Week. Tons.	Previously Tons.	1874. Tons.
Alexandria.....	810	74,656	79,548
Georgetown.....	2,068	20,929	20,161
Philadelphia.....	23,370	424.023	556,586
Baltimore...	4,571	154,168	223,281
Other places.....	3,913	230,574	196,985
Great Britain.....	....	2,224	3,204
Nova Scotia	899	25,296	60 931

Shipments from Pictou, N. S., for the week ending July 10:

	Tons. Week.	Year.
To United States.....	1115	7485
" West Indies.....	1107	1107
" South America.....	—	1002
" Canada.....	9569	38637
" Other Provinces.....	2630	16290
	14,421	64521

Shipments from the Block House, Cow Bay, C. B., to the following destinations, for the week ending July 30:

	Week.	Year.
Provinces.....	264	3379
West Indies.....	..	866
United Stated.....	1966	3020
	2230	7205

COAL TRADE REVIEW.

Duties.

Anthracite free, *Bituminous,* per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack,* or *culm,* such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, Friday Evening, Aug. 13, 1875.

Anthracite.

Hard coals continue in good request, and soft coals are still accumulating and in light demand. There is but little coal selling at a loss by contractors, although occasional cargoes, under demurrage, meet such a fate. Some contractors are said to be freely offering coal at a concession of about 10 cents a ton from circular prices, and others at 5 cents, although many are procuring full rates. It is but natural to expect some concessions at this season, especially from large contractors who take their allotments if for no other purpose than to sustain their standing with the companies furnishing them with coal. There were some 9000 tons of coal lately contracted for by the city, for use in the schools, at figures, it is said, considerably below what the large companies could furnish it at and maintain combination prices. Following this comes another contract for coal for the Department of Docks, at a figure that must net a loss, unless some firm or company is quietly making a concession, or some other unusual advantage is given or taken, such, for example, as the giving of 1700 lb. for a ton, which MR. GOWEN lately showed to be the practice with some Philadelphia dealers. The prices at which government and city contracts have been made have caused considerable comment. It seems strange that only this class of contracts should be made at such specially low rates, and the well-known fraudulent practices which seem almost inseparable from public contracts, whether made by the Indian Ring, the Canal Ring or the Bureau of Charities, give these transactions a suspicious appearance. In fact, we see but two alternatives in this case. Either the Companies are selling their coal below the prices which they quote, and which they assert they maintain, or else the contractors deliver less than full weight on their contracts. If there be another explanation of the facts we are not advised of it, and we think the subject worthy the attention of the trade.

For some time past, the Philadelphia and Reading Coal and Iron Company have had an advantage of about 15c. a ton on shipments to Boston, over companies shipping from this city. The same was the case last year, and the New York companies have shown considerable dissatisfaction with it, but it is now understood that an arrangement has been entered into that will equalize the cost of delivering similar coals to this and other Eastern ports.

Our production tables show that the out-put of anthracite coal for the week ending August 7th, was 563,023 as compared with 638,678 tons for the previous week, showing a falling off last week of 75,655 tons. For the corresponding week last year the out-put was 410,659 tons, showing a gain last week of 152,364 tons. The total out-put since January 1st, has been 9,242,679 tons as compared with 11,255,109 tons for the corresponding period of 1874, showing a loss this year of 2,012,429 tons. Under the contract system of 1874, the market was considerably unsettled at this season, and there being no special inducement for buyers to lay in stocks, they neglected to purchase until late in the year, so that at the end of the season a very large business was done. Considering the wants of the manufacturing industries, it appears to us that the country is as well supplied to-day as it was a year ago. If such be the case,

when we notice a falling off of 75,000 tons in the production in one week, it seems improbable that the production of 1875 will reach that of 1874 by 1,500,000 tons at least.

Bituminous.

The week under review has been a very quiet one. The out-put has fallen off somewhat in every direction. Prices remain irregular and about as quoted by us for several weeks. We note the Baltimore and Ohio Railroad has discontinued the use of Cumberland coal from the small seams, for both locomotives and steamers. The shipments of companies mining from these seams have shown quite a falling off in consequence. Companies having these coals for sale have heretofore drawn attention to their being used by the railroad company. If this action of the railroad company was due to the result of fair trial it will seriously affect some of the Cumberland companies. The out-put of Cumberland coal for the week ending August 7, was but a few hundred tons less than for the week previous, but it shows a falling off of about 8,000 tons as compared with the corresponding week of 1874. The total decrease since January 1st, as compared with the corresponding period 1874, was 63,485 tons. In a short time a steam collier will be tried on the Chesapeake and Ohio Canal; if it proves a success a full fleet will be built during the winter to meet the requirements of next season's business; it is estimated that a saving of from 55@65c. will be made even on the low rates of freight now prevailing.

Foreign and Gas Coals.—There are no sales being made in either foreign or domestic gas coals. The shipments are confined to contracts made early in the season.

Freights.—Vessels are in very liberal supply at Georgetown, and freights are steady at $1 75 to Boston, at which rate numerous charters have been made during the week. Rates from this city and Philadelphia are unchanged. Vessels are scarce in this port, although the requirements are light, which has kept rates regular on the basis of $1 25 to Boston, although an attempt, firmly opposed by the shippers, was made to advance them to $1 30. The cause of the scarcity of vessels in this port is that so many have been storm-bound during the past two weeks of severe weather.

Philadelphia Coal Trade.

PHILADELPHIA, Aug. 12, 1875.

The immense tonnage of family sizes is filling rapidly all the available room, and signs of accumulation at all points are every day more visible. The trade will, no doubt, take another start for a few weeks some time in September; but some curtailing in the production may be necessary before that, if prices are to be maintained. Indeed, if reports are to be credited, there is a good deal of under-selling going on everywhere, and which is done by unscrupulous parties, having bound themselves not to do so, and those who are honest are the sufferers. This is the inevitable result of any artificial rate maintained by a combination when the supply is in excess of the demand.

Some captains are also knocking under, and accepting lower rates to Boston. Several vessels are loading at $1.50. Freights to the South are 80c. to Washington, 75c. to Norfolk, and 90c. to Richmond, and not very firm.

Wholesale Prices of Anthracite Coal for August f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 00	5 10	5 20	5 45	5 90	4 90
‡Pittston at Newburgh	5 05	5 05	5 15	5 30	5 80	4 85
Wilkesbarre at Port Johnston	5 00	5 10	5 20	5 45	5 90	4 90
Plymouth, R. A., *Net*	....	....	....	5 45	5 90	4 90
Susque. Coal Co. at Amboy W.A.	....	....	....	..	....	....
Kingston at Hoboken	....	....	....	....	....	....
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 45	5 55	5 90	5 10
Old Company's Room Run "	....	....	....	....	....	....
§Sugar Loaf, Hobok. & Amb."	5 55	....	5 45	5 55	5 90	5 10
Lehigh Coal Exchange "	5 55	....	5 45	5 55	5 90	5 10
Honey Brook Lehigh	5 55	....	5 45	5 55	5 90	5 10
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	5 55	....	5 45	5 55	5 90	5 10
†Schuylkill Coals at Port Richmond.						
Schuylkill white ash	4 50	4 60	4 70	4 95	5 40	4 40
Schuylkill red ash	....	....	5 00	5 05	5 45	4 40
Shamokin white and red ash	....	....	....	5 15	5 55	4 45
Lorberry	....	....	5 70	5 70	5 70	4 60
Lykens Valley	....	....	6 30	6 30	6 30	5 45

Per ton.

Freight from Hoboken and Weehawken to New York .... 40c.
" " Elizabethport & Port Johnston to N. York. 45c.
" " South Amboy to New York ..... 50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton. The expense of towing vessels from New York harbor to Rondout and back will be borne by this Company.

†Freight from Port Richmond to New York (free of discharging) 85c. per ton.

‡Prices to the Trade.

§By Canal at New York, Jersey City and Brooklyn, 30c. additional alongside.

Schuylkill coal is delivered f.o.b. of boats in New York harbor at 50c. per ton additional to these rates.

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	..
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt.	5 00	6 50
Despard, West Va.,	——	6 50
Murphy Run, West Va., at Baltimore	4 75	6 50
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	30/	12 00
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S.	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	....@....
Cumberland, at Baltimore	4 15@4 50	5 75@6 25
Clearfield and Allegheny, "Derby," "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, $1 25; at Greenwich, Phil.	4 60	5 65

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
*Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	7 00	7 25	6 75
Lehigh & Locust Mountain, del'd.	7 00	7 50	6 50
Schuylkill Red Ash, del'd	....		

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

*Lackawanna grate is quoted 25c. per ton less than egg.

Williamsburgh, N. Y.

Lackawanna Coal at Yard.

Stove	$6 40
Egg	5 90
Chestnut	5 40

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb				$23 00
Liverpool House Cannel	"	"	"	25 00
American "	"	"	"	16 00
American Orrel	"	"	"	11 00
Red Bank Cannel	"	"	"	14 00
Cumberland	"	"	"	7 00

Prices of Scranton, Pittston, Plymouth, Shamokin and Lackawanna Coal, for the Month of August, at various points.

PER TON of 2000 lb.

	DELIVERED AT						
	Elmira.	Watkins.	Ithaca.	* Syracuse.	† Oswego.	† Rochester.	‡ Buffalo.
	Afloat	Afloat	Afloat	Afloat	F.O.B	Afloat	Afloat
Grate	4 45	4 75	4 75	4 90	5 85	5 60	5 85
Egg	4 45	4 75	4 75	4 90	5 85	5 60	5 85
Stove	4 85	5 20	5 20	5 35	6 30	6 05	6 30
Nut	4 60	4 65	4 95	5 10	6 05	5 80	6 05

† Coal is delivered to retail consumers at these points for $1.25 per ton additional to these rates.

* At this point 70c. per ton additional is charged to retail consumers.

‡ At this point 50c. per ton additional is charged to retail consumers.

Baltimore, Md. Aug. 9, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 65
Broken	5 46	5 31
Egg	5 77	5 62
Stove	6 02	5 87
Nut	4 90	4 87
Shamokin. (red or white ash), and "Boston," freeburning white ash,		
Egg	5 80	5 62
Stove	6 00	5 87
Lykens Valley, red ash,		
All sizes	6 30	9 12

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2240 lb. $7 00@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 35	4 65
West Virginia f. o. b. at Locust Point		5 50
Youghiogheny Gas, f. o. b. at Locust Point		5 50
Swanton Coal, George's Creek		4 40

Boston. Aug. 9, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	10 00	Anthracite	.6 50@ 7 25
Glace Bay	5 00	" retail	.7 50@ 8 00
Sydney	6 25		

The *Commercial Bulletin* of August 7th, 1875, says:—

"Coal is steadily piling up upon the wharves of the retailers, who are now placing liberal orders preparatory to winter. The manufacturers, however, who are all buying anthracite from hand-to-mouth, were forced to pay an advance of from 10 to 15 cents a ton on coals in our harbor the early days of the week, which was lost at the close, and the market is a trifle easier on spot lots. The storm of Sunday night, Monday, and Tuesday, prevented most of the coal fleet from making harbors North of Cape Cod, and this temporary scarcity was taken advantage of by dealers. Lump and egg coals deliverable before the first of September are easier, cargoes offering as low as 5 cents per ton from the schedule rates for prompt takers. The suspension of the Fall River Mills has some little influence in this anxiety, while the unexpected dullness in cotton and woolen manufacture for the present month urges them to resell some of their contract lots on the open market.

"The retail yards are doing even less than a year ago in the way of deliveries, and quote $8 25 delivered as their price.

"Bituminous coals are steady, and in little better inquiry from the railroads, who, in having a better excursion trade than anticipated, are working out their conservative coal heaps. Spot cargoes of George's Creek and Cumberland are stiffer at the close.

"Provincial and English coals are in good supply, both on board and on dock, and prices are nominally easy.

"Freights are hardly as strong as a week ago, Philadelphia freights quoting $1 60; Baltimore, $1 65; and Provincial, $1 75 to $2 20, according to size.

"We quote Anthracite, $6 50@7 25; English cannel, $22; Sydney, $6 30; Lingan, $5 20; Pictou, $5 60; Cumberland, $5 80@6; Youghiogheny, $6 80."

Buffalo, N. Y. Aug. 9, 1875.

Reported by our Special Correspondent.

Prices free on board vessels here are as follows:

ANTHRACITE.

	Afloat.	F. O. B. Vessel.	Retail. Deliv'd.
Grate	$5 85	$6 35	$7 00
Egg	5 85	6 35	7 00
Stove	6 30	6 80	7 45
Nut	6 05	6 55	7 20

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co.	3 50	3 25	....	2 30	....

Chicago, Ill. Aug. 9, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

Retail prices per ton of 2000 lb. delivered to buyer.

No change in prices of coal.

		BITUMINOUS.	
Lehigh Lump	$10 00	Briar Hill and Erie	@ 7 00
Lehigh grate and egg	10 00	Walnut Hill, Pa.	@ 6 00
Lehigh stove and chest.	10 50	Midway, Pa.	@ 6 00
Lackawanna, Wilkes-Barre and Pittston*		Cannel	@ 9 00
		Blossburg	8 00
Grate and egg	9 00	Indiana Block	5 50
Stove and chestnut	9 50	Hocking "Brooks"	6 00
		Wilmington and Illinois.	4 50

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Receipts by Lake for the week ending Aug. 7th:
Anthracite 22,430 Tons.
Bituminous 11,389 "
Receipts of coal by rail unknown.

Cincinnati, O. Aug. 9, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	7½c.	—
Pomeroy coal	6c.	—
Cannel coal, according to quality	12½@16c.	—
Semi Cannel	7½c.	—
The following are the retail prices delivered:		
Youghiogheny	— c.	$3 25
Pomeroy	— c.	2 75
Cannel	— c.	5 50
Kanawha Semi Cannel	— c.	3 25
Anthracite	9 50@10	
Foundry coke	—	—
Coke, hard and soft	10 c.	—

Cleveland, O. Aug. 9, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb. f. o. b. vessels.

Youghiogheny, lump	$4 40	Columbiana	$3 00
Youghiogheny, nut	3 50	StripVein & Steubenville	3 30
Briar Hill, according to quality	$3 05 to 4 00	Mountain Blossburgh (blacksmith)	5 40
Massillon	$3 00 4 00	American Cannel Coal Co.'s Cannel	4 40
Hocking Valley	3 35		
Straitsville	3 35		

We can chronicle no change in the state of the coal market as regards prices. The prevailing difficulties in

the Massillon district have reduced the supply from that section, and no Massillon coal is being offered. This has, thus far, produced no effect upon the price of the staple from other quarters. Should the strike extend throughout the Valley there may be an appreciable rise in prices. The supply of Mineral Ridge and Straitsville is amply sufficient to meet all demands. Coal freights are unchanged.—*Manufacturing and Trade Review.*

Connellsville.

August 11, 1875.

The shipments during the week ending August 9, show a decided increase over the preceding week. The trade is dull, and the prices obtained are very unsatisfactory to the producers. As the men are now working at very low wages, we can see no hope for a change until the foolish mania for building ovens dies out. Prices obtained average 2⅜ to 2½ cents per bushel on the cars.—*Tribune.*

Detroit, Mich. Aug. 9, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton.	$10 50	Blossburg	8 50
Lehigh " prep.sizes.	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	7 50
		Massillon	7 00

Erie, Pa. Aug. 9, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb. Bituminous f. o. b.

Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. Aug. 9, 1875.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers.

Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

IndianCreek, per ton	$2 75	Peytona cannel, per ton.	7 00
White River, "	2 75	Indiana Cannel	6 50
Brazil Block, "	2 65	Hocking Valley	4 25
Highland, grate, "	2 25	Youghiogheny	4 75
Block coal, nut, per car.	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack "	17 co	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Broken	$9 95	Nut	9 80
Egg	9 95	Stove	10 25

Owing to the Miner's strike there is no Lehigh coal in this market.

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	8
White River	14	" Slack, "	7
Brazil Block	14	Peytona Cannel	28
Highland grate	14	Indiana "	24
Block Nut, domestic use.	12	Youghiogheny	20
Highland Nut, " "	12	Blossburg	26
" " steam	8	Piedmont	26

GAS COKE(measured.)

Crushed	15c.	Lump	12c.

ANTHRACITE.

Wilkes-Barre and Lackawanna (all sizes) ..... $10 per ton.
Lehigh, retail ..... $11 50 per ton,

Louisville, Ky. Aug. 9, 1875.

Specially reported by Messrs. BYRNE & SPEED.

WHOLESALE.

	per bushel		per bushel
Pittsburgh	8c	Pine Hill	9c.
Raymond City	9c.	Kentucky	9c.

RETAIL.

	per bushel		per bushel
Pittsburgh	14c.	Peytona Cannel	22c.
Raymond City	12c.	Buckeye "	20c.
P ne Hill	12c.	City-made Coke	10c.
Kentucky	11c.	Anth., per ton, $10 oo to 10 50	

Screened Pittsburgh per load $3 00
Screened Raymond City. 2 75
Pine Hill (Kentucky) 2 75
Cannel ..... $5 to 5 50

Milwaukee, Wis. Aug. 9, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Scranton	$9 50
Lehigh Prepared	10 50	Briar Hill, select	8 00
Lackawanna	9 50	Blossburgh	8 co
Pittston	9 50	Pittsburgh	7 co

New Orleans, La. Aug. 7, 1875.

Pittsburgh coal, retail, per bbl	60c.
" wholesale	35c.
" steamboats, per box	50c.
" to manufacturers, per bbl	55c.
" shipments, per hhd	$6 00
Anthracite, wholesale, per ton	none.
" retail, "	...
Virginia Cannel, per bbl	90c.
Scotch " "	....
St. Bernard, wholesale, per bbl	37½c.
" retail, "	60c.

Pittsburgh, Pa. Aug. 11, 1875.

By our Special Correspondent.

Per ton of 2000 lb. and Bushel of 76 lb.

Youghiogheny coal, ton,	$2 00	Pittsburgh retail deliv'd.	
" coke, "	2 50	per bushel	9@10c.
Connellsville coal, "	2 50	Anth'cite on cars Lehigh	$7 75
" coke	$2 25@2 75	" " Wilkes-	
Pittsburgh coal	1 85	Barre	6 75

Twenty-five to fifty cents per ton additional for delivery.

COAL.—Since the date of our last review some 3,000,000 bushels additional have been shipped out from this point, making in all, since the resumption of navigation, about 13,000,000 bushels. This is something remarkable; we do not think, indeed we are satisfied that this was the largest run of coal ever made from this point at this season of the year. The result is that the supply here, which had been accumulating for several months, is almost exhausted, and while the increasing of the stocks below has weakened those markets and caused a decline, dealers have the coal where they can sell sooner or later, whereas, while it was here, they could do nothing with it; in a manner it was dead stock. There was considerable coal lost, some firms suffered severely, but this is nothing unusual, and while the recent rains were disastrous to our agricultural interests, the rise in the waters was a great benefit to our coal interest.

COKE.—There is, so far as we can learn, nothing particularly new or important to note in this branch of business; trade, while it is not to say active, is about all it usually is at this season of the year, and about all that can be expected under existing circumstances. The fact that so many pig iron furnaces are out of blast keeps the consumption down, but then the production has been light for a year past and stocks are by no means large. Prices remain about as last quoted, $2 65@2 75 per ton, delivered free on cars in Pittsburgh.—*American Manufacturer.*

Richmond, Va. Aug. 9, 1875.

Specially reported by S. H. HAWES, Dealer in Coal.

Prices are unchanged, as follows:

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$12 00	New River Bituminous,	$4 85
" semi-Cannel	4 75	Clover Hill Coal	4 25
Coalburgh Splint	4 90	James River bitum ...	3 30
Lewiston "	4 90	" " Carbonite,	5 80
Kanawha Gas coal	4 50		

Toledo, Ohio. August 9, 1875.

Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb. on cars.

Hocking Valley	$3 40	Massillon	4 20
Straitsville	3 40	Youghiogheny	5 00
Shawnee	3 40	Blossburg	7 00@7 50
" nut	2 90	Cumberland	7 00@7 50
Briar Hill	5 50	Connellsville coke	7 00

ANTHRACITE.

Grate, screened	$7 75	Stove, screened	$8 25
Egg, "	7 75	Chestnut "	7 75
Lehigh Lump	9 50		

40 cents to $1 per ton additional for delivery at retail.

San Francisco.

From the *Commercial Herald*, July 29, 1875.

Imports from January 1st to July 27:

Anthracite tons	7,027	English, tons	26,537
Australian, tons	67,533	Vancouver Island, tons	34,567
Coos Bay, tons	20,721	Rocky Mountain, tons	42
Cumberland, tons	6,703	Seattle, tons	28,670
Mt. Diablo, tons (6 mos)	75,700	Bellingham Bay, tons	6,170

The market continues to be liberally supplied with Australian and other foreign. Some sales of Scotch and English, as well as of Sydney are reported, but the rates obtained were so ruinously low that the prices are very generally withheld from the public. Imports for the period under review include 585 tons English per *Lady Blessington* from Liverpool; ship *Criterion* from New York, 200 tons Anthracite; *Nereus* from Liverpool, 200 tons; *Menshikoff*, 400 tons Seattle, etc. We quote Bellingham Bay at $8 50; Coos Bay, $10; California Mt. Diablo Seam, $6 25@8 25 for fine and coarse respectively. Cargoes of Scotch and English Steam to arrive may be quoted at $9. Cumberland, $18@20; Nanaimo, $9 50@10; Seattle, $9 25@10; Sydney, $9@9 25 by the cargo. The *Belfast*, from Sydney, brought 2,670 tons.

Montreal. Aug. 9, 1875.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Wholesale per ton of 2240 lb.

Scotch Steam	$5 50	Cape Breton Steam	$4 50
Pictou "	5 00	Newcastle Smiths,	7 co

Anthracite at retail, per 2000 lb., delivered.

Egg	$7 50	Chestnut	7 00
Stove	7 75		

Toronto, Ont. August 9, 1875.

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.†
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 56	2 42	2 86	2 89	3 12
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	48	69
‡ Philipsburg, N. J.	97	83	1 34	1 30	1 65
‡ Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 20	2 06	2 80	2 53	2 76
High Bridge, N. J.	2 40	2 20	2 80	2 79	3 09
Somerville and Raritan, N. J.	2 80	2 60	3 20	3 19	3 49
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 62	2 42	3 35	3 01	3 19
¶ Jersey City, N. J., and New York, via Morris Canal	2 85	2 34	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR.	3 30	3 10	3 70	3 69	3 99
§ Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

From Mauch Chunk to New York (towing limits) and Jersey City† via Lehigh Valley RR. and Morris Canal... $2 36
From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R.R. in connection with Pa. and N. Y. R.R. 2 59
From *Lackawanna Junction* to ‖*Weedsport* for *Rochester and Charlotte* 2 41
From *Lackawanna Junction* to *Sterling* for *Oswego, N.Y.*.. 2 58
* To this point for Syracuse the rate is 2 06
‖ To this point for all places between Rochester and Buffalo the rate is 2 59
* The rate to this point for Syracuse is 2 22
** Rates on lime coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re shipment from this point is 20c. less than above rate.

Schuylkill Coals. per ton of 2240 lb.	From Pine Grove.	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.
To *Port Richmond*, for shipment, via P. & R. R. R., Main Line	2 12	2 07	2 co	1 99	1 92
Philadelphia, Retail yards	2 22	2 17	2 10	2 09	2 02
Harrisburg, via Lebanon Valley Branch	1 35	2 02	1 95	1 94	1 87
Allentown, via East Pennsylvania Branch	1 70	1 65	1 58	1 57	1 50
Lancaster, and Points on Lancaster Branch, via R. & C. R.R	1 82	1 77	1 70	1 69	1 62
Dauphin, via Schuylkill and Susquehanna Branch	85	....	1 43	1 42	1 35
Slatedale Junction via Berks and Lehigh Branch	1 88	1 83	1 76	1 75	1 68
Lebanon, via Lebanon and Tremont Branch	96	....	....	....	....
From *Tamanend* to *Catawissa*, via Catawissa and Williamsport Branch Railroad					94
From *Tamanend* to *Williamsport*, via Catawissa and Williamsport Branch Railroad					1 39
* From *Port Clinton* to *Philadelphia* via Schuylkill Canal, including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of unloading)					1 69
* From *Port Clinton* to *New York*, within towing limits, " 53d street					2 71

For shipment via Main Road or Schuylkill Canal, one and one-half cents per ton per mile, and two cents per ton additional, to Port Carbon, Mount Carbon, Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

Coal sent to points on the Catawissa and Williamsport Branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamanend.

The rates of freight and tolls on lump and steamboat coal (except that sent to Richmond for shipment) will be twenty per cent., and on broken coal will be ten per cent. less than the above rates.

* The charge from Schuylkill Haven to Philadelphia or New York is 11c. additional to these rates.

On and after July 5th, the Drawback of ten cents per ton now paid on shipments of Anthracite Coal from Schuylkill Haven and Port Clinton, that have passed Fairmount Locks to Philadelphia and vicinity, will be discontinued.

The Geneva, Ithaca and Athens Railroad Company.

Rates from State Line, on a consignment of coal of not less than 25 tons of 2240 lb. will be es follows:

To Ithaca (local), 75c.; to Geneva (local), $1 50; to Geneva or Cayuga for Buffalo and Tonawanda, 92c.; Geneva or Cayuga for Rochester and Charlotte, $1.03; Geneva or Cayuga for Phelps Junction, for S P. S. and L. O. S. R. R.'s, 92c.; Geneva or Cayuga for all other points on N. Y. C. R. R., $1 12.

Rate from Lackawanna Junction to State Line on coal for all points on the G. I. & A. (excepting Geneva), and C. L. R. R's., $2; Ithaca (shipment), $1 40; for Geneva, $1 40. For all other points on the N. Y. C. & H. R. R. R., $1 40.

Rate from State Line to Van Ettenville for all points on the Horseheads Division of the U. I. & E. R. R., 34c. Rate from Van Ettenville to any point on said Division, 33c.

Rate from State Line to Ithaca, for Buffalo, Rochester, Syracuse, and all other points via Erie Canal, 55c.

Rate L. & B. Junction to f. o. b. boats at Ithaca for Buffalo, or other Canal points, $2 05 per gross ton.

Rate L. & B. Junction to Buffalo, Black Rock, Susp. Bridge, (via Geneva), all rail $3 94 per gross ton.

Rate L. & B. Junction to Rochester, all rail $3 39 per gross ton.

Canal freights, Ithaca to Buffalo, $1 10 net ton; to Rochester, 75c. (subject to change).

Erie Canal.

	per 2240 lb.
Hoboken to Buffalo	75c.
" Rochester	70c.
" Oswego	65c.

The above rates are exclusive of harbor towing, trimming, unloading and tolls.

Delaware and Raritan Canal.

Tolls and Steam Towage.

Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to New York, towing limits within 53d st.			74c.
" Greenwich "	Bituminous		64c.
" " "	Anthracite		69c.
" Lambertville "	Anthracite		62c.
" Port Richmond "			68c.
" " "	Semi-bituminous coal,		63c.
" Philadelphia "	Cumberland	"	58c.
" Trenton "	Anthracite	"	37c.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:

For Anthracite Coal ..... 35c.
Bituminous and Semi-bituminous Coal... 35c.

Freights.

Per ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore and Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	2 co	....
Albany	*85	1 70	....
Amesbury, Mass	....	....	....
Bangor, Me	†1 35	1 85	1 25
Bath, Me	1 60	1 65@1 80	1 30
Baltimore	....	....	....
Boston, Mass	1 60 & 3c.	1 75	1 25
Bridgeport, Ct	*85	1 50	80
Bristol, R. I.	....	....	90
Cambridgeport, Mass	1 60& 3c.	....	1 25
Derby	....	1 60	....
Dighton	....	1 00	§1 25
East Cambridge	1 60&3c.	....	...
Fall River	1 35	1 50	90
Hackensack	....	....	....
Hallowell, Me	....	....	....
Hartford	...	....	1 25
Hoboken	†85	1 30	40
Hudson	1 00	1 60	....
Jersey City	....	1 30	40
Lynn, Mass	‖1 60	.. ..	‖1 25
Middletown	....	....	1 10
Mystic	....	....	....
Newark	....	....	....
New Bedford	1 30	1 50	90
Newburyport	....	1 90	1 35
New Haven	*85	1 50	90
New London	1 35	1 50	85
Newport	1 35	1 50	90
New York	85†	‖1 40 at 50	40
Norfolk, Va	75	65	....
Norwalk	....	1 65	90
Norwich	....	1 65	90
Pawtucket	1 40‖	1 75	‡100
Philadelphia	....	1 00	....
Portland	1 50	1 75	1 20
Portsmouth, N. H.	1 60	1 85	1 40
Providence	1 35	1 50	90
Petersburg, Va	....	50	....
Portsmouth, Va	....	....	....
Poughkeepsie, N. Y.	....	1 50	....
Richmond, Va	95	80	....
Rockport	....	....	....
Saco	....	....	....
Sag Harbor	....	....	1 00
Salem	1 65	1 75	1 25
Salisbury Pt., Mass	....	....	1 50
Savannah, Ga	....	1 50	....
Stamford	*85	....	85
Stonington	....	....	....
Taunton	.. .	..	1 30
Trenton, N. J	....	....	....
Troy	....	....	....
Warren, R. I	....	....	90
Washington, D. C	80	....	....
Wareham	....	1 50	....
Weymouth	....	1 80	....
Wilmington, Del	....	85	....
Wilmington, N. C	....	1 50	....

* And discharging and towing.
† And discharging. ‡ And towing.
§ 3c. per bridge extra.
‖ The rate to this point by barge is $1 60.

Freight on Nova Scotia Coals.

Pictou, Nova Scotia, to	New York		$1 80
" " "	Portland, Me		2 co
" " "	Montreal, Canada		2 35
" " "	Quebec	"	1 80
" " "	Halifax, N S		1 25

Pilotage for vessels of from 80 to 150 tons, $6 inward and $4 outward. From 150 to 1000 tons 10 to $17 inward and $6 to $12 outward. Vessels of 1000 tons and upwards, 2c. per ton inward and 1½c. per ton outward.

Towage 3c. per ton. Trimming 3 hatch vessels, 6c per ton. Two hatch vessels 7c. per ton.

Towing.

From foot of 23d Street, East River, and *return*, *per ton*.

	cts.		cts.
Bridgeport, Conn	33⅓	New Haven and Norwalk, Conn	33½
Hartford and Stonington, Conn	75	New London, Conn	60
Norwich, Conn	68	*Derby, "	3.½
Stamford, Conn., per boat	$75	Harlem, N. Y., per boat.	$18
Whitestone, L. I	$30	Glen Cove, L. I	50

	cts.
Manhattanville, via Hudson River per ton	8
Harverstraw and Peekskill, via Hudson River	16
West Point and Cold Spring " "	17
Rondout " "	23
Yonkers, boats of 100 tons capacity " " per boat.	$5
Sing Sing and Peekskill " " "	20

* $10 per boat extra is charged for towage to this point.

Boats having less than 200 tons will be charged the same to Eastern points as if carrying that quantity.

THE BRITISH COAL AND IRON TRADES.

LONDON, July 31, 1875.

THE IRON TRADE.

UNDER pressure of continued failures in commercial circles, a lack of confidence is becoming more noticeable. Consumers are only buying from hand-to-mouth, believing that prices must decline, which has given a weak tendency to the markets in almost all the districts. Many furnaces are already blown out, and others must follow if an improvement in the trade does not take place soon, which, at the present time, does not look probable. The exports of Middlesboro pig iron into Grangemouth, for the week ending July 25, showed an increase of 610 tons over the corresponding week of last year, and an increase since January 1st of 14,980 tons. It is expected that the returns of the North of England Ironmasters' Association will show but little, if any, increase of stocks, as the make has been very much reduced. The finished iron trade continues without any improvement. Many works have their orders pretty well worked up, and having no prospects of securing new ones, will be compelled to suspend operations until a revival in trade takes place. But little is heard of Belgian irons, as English irons are now so low as to come into competition with them, not only in England, but in the markets of the world. A move has been made which, if followed up by others, will tend to equalize wages in the two countries.

IMPORTATION OF BELGIAN MINERS INTO ENGLAND.

Mr. JOHN MITCHELL, of the Swaithe Colliery, South Yorkshire, has brought from Belgium a number of laborers, who are employed at the colliery, and are giving great satisfaction. This is the first introduction here of foreigners for colliery work, but it is thought more will follow.

The following are the leading quotations of iron:

——	Tees, f.o.b.	Barrow, f.o.b.	Liverpool, on trucks.
No. 1 Pig	56/	*80/	70/6
No. 2 "	54/	*77/6	. .
No. 3 "	48/6@49/6	*75/	68/
No. 4 Forge	47/	75/	65/
Common Bars	160/		....
Rails	140/@147/6		170

* Bessemer Pig.

Common bars in South Staffordshire, £8, and marked bars £10 12/6 extra for Lord Dudley's.

THE COAL TRADE.

A good demand exists for gas and house coals in the North of England, while for other sizes there is a great lack of demand. The Liverpool market is very quiet, the prices realized hardly covering cost of producing and transportation. A very active demand exists in Wales, but the supply more than meets the requirements. The shipments from Hull, Grimsby and Goole for the week were in excess of those for the same periods in 1874 and 1873. Elsewhere trade is very quiet, and the business, as a rule, unremunerative; many pits are only working partial time and large stocks have accumulated. Tyne coals are quoted f. o. b. as follows: 12/@16/ for house; 12/@13/ for steam; 8/ 6d@10/ for nuts; and 8/@10/ for gas coals. Hetton f. o. b. Sunderland, 10/ 6d.

THE LABOR MARKET.

The South Wales colliers, to avoid strikes and lockouts, have agreed to accept the following basis: 1/ 10d is to be paid for cutting coal when it is sold at 14/ per ton, and 2d per ton rise for every 1/ per ton rise in the price of coal up to 20/; 2/ 10d to be the maximum price paid for cutting, and 1/ 10d the minimum. All other differences to be settled by arbitration.

The South Yorkshire and North Derbyshire Coal Owners' Association met during the week, but no decision on the wages question was arrived at.

The Trades Union Parliamentary Committee have issued a circular calling a meeting of the next Congress to take place in Glasgow, in October.

Mr. DAVID DALE, of Darlington, who was the leading spirit in forming and keeping in existence the North of England Board of Arbitrators, has been presented by the Board, in recognition of his services, with a portrait of himself, painted by Mr. OULESS at a cost of £500.

THE MINERS' ASSOCIATION COLLIERY.

£40,000 have now been paid on the Shirland Colliery, leaving £30,000 to be paid, with 5 per cent. interest, during 21 years. It is said that arrangements are now being made in London to issue a prospectus asking the general public to become shareholders The association has been working the colliery since 1st inst.

PATENT FUEL.

This article is in so good request, that a company has been formed to erect extensive works at Swansea. It is said that the works will be capable of turning out 700 tons of patent fuel per day.

SCOTLAND.

The nominal price of Scotch pig iron is but very little altered, some large sales are, however, reported under quoted rates. It is thought speculators will find it impossible to get, or keep up, the prices for any length of time in the present state of the iron trade. Such an event would be quite probable in times of good, or even steady, business, but not with such depression as we are now undergoing. Consumers, being alive to this, are buying only their pressing necessities, whilst the makers still contend they will blow out further furnaces rather than lower existing rates. This course, even supposing they carried it out, would, it is thought, only temporarily arrest the downward movement, yet necessity may compel many to adopt this only alternative. For cash, warrants have sold at from 60/6d.@60/3d The prices of some of the principal makers' brands show a few slight reductions as follows:—G. m. b. at Glasgow, No. 1, 61/6d., No. 3, 60/; Gartsherrie, No. 1, 68/6d., No. 3, 61/6d.; Coltness, No. 1, 69/, No. 3, 64/; Summerlee, No. 1, 66/6d., No. 3 62/; Langloan, No. 1, 67/; No. 3, 62/; Carnbroe, No. 1, 64/, No. 3, 61/; Monkland, No. 1, 61/6d., No. No 3, 60/; Glengarnock, at Ardrossan, No. 1, 66/6d, No. 3, 62/; Eglinton, No. 1, 61/, No. 3, 60/. For some time ironmasters have been carefully keeping down their production of pigs, as nearly as possible, to the requirements of the trade, reducing the number of the furnaces in blast where this step was necessary, and the stocks at the works are not nearly so large as they frequently have been when trade was brisk. Still, they do accumulate at some places in spite of all that can be done. The quantity of pigs to be operated upon by speculators does not, at this moment, much exceed 34,000 tons, and the warrant market exercises little effect upon the trade. At present, much dependence is placed upon the exports. The shipments of pig iron from Scotch ports, for the week ending the 24th instant, amounted to 11,282 tons, showing an increase of 2,799, as compared with the corresponding week of 1874. There is hardly any sign of animation in the different branches of the manufactured iron trade, and prices remain stationary.

COAL.

All over the West of Scotland the coal trade is dull, with prices tending downward. The shipping trade has been somewhat slacker this week, and the home demand is very slow, indeed. Household coals are bought at from 8/@10/ per ton; Wishaw Main, at from 7/3d.@8/, and splint, 8/@10/.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, August 13, 1875.

American Pig.—We note sales of 500 tons No. 2 Musconetcong, and 150 tons of white iron, on private terms. The pipe contracts being all filled, the demand has again subsided. Prices remain unchanged, and stocks continue to accumulate a many of the furnaces. Notwithstanding this, the inclination is rather to increase the number of furnaces in blast, than to blow out. The prevailing prices undoubtedly net losses, or yield no profits, to some of the companies now working; though we know that well-located and skillfully managed furnaces are making iron at $20 a ton. So long as furnaces lose less money running than standing idle, they will continue in blast. We quote No. 1 foundry at $26@27; No. 2, $24@25; and forge at $22@24 per ton.

Scotch Pig.—We note sales of 400 tons of Eglinton, in four lots of 100 tons each, at from $27 cash to $29, four months, with interest added, and 100 tons of Coltness on private terms. The demand for consumption continues very small, with no indications of an early revival. The Glasgow market, (reported by telegraph,) owing to heavy shipments, shows an advance of about 2/ per ton. The foreign shipments from Scotland appear to have been necessary to sustain the home market, and much of the iron has been sent to every market consuming it, resulting in losses to the shippers, and thoroughly demoralizing the markets where sent. We quote Eglinton at $29@$30, and Coltness at $31@$32, other brands being out of the market.

Rails.—We are unable to report any further sales. Negotiations are going on. We quote iron at mills at $48@$50. None of the mills are now quoting steel at less than $75.

Old Rails.—We note a sale of 150 tons on private terms, and quote at $26@$26 50. There are some fair inquiries in the market, but buyers and sellers differ in their views of value.

Scrap is very quiet, and is nominally quoted at $30@$31.

Baltimore. Aug 11, 1875.

Specially reported by R. C. HOFFMAN & Co.

We have nothing of note to report in the iron market. A general impression prevails that there will be an improved demand between the present time and close of navigation, but we see no indication of a change so far. Purchases are limited to present necessities, and prices favor buyers. We quote:

Baltimore Charcoal	$30@35	Anthracite No. 2	$24@26
Virginia Charcoal	29@35	" No. 3	23@24
Anthracite No. 1	26@27	Mottled and White	20@22

Boston. Aug. 12, 1875

By our Special Correspondents.

MESSRS. E. P. CUTTER & Co. write us as follows: We have nothing new to communicate. The same dullness heretofore reported continues, with sales of small parcels of Scotch and anthracite irons, also a small lot of charcoal pigs. We think, however, that there is more inquiry, and hope to see a moderate demand all next month. There is no particular change to note in prices.

THE *Commercial Bulletin* of August 7 says:

"PIG has been somewhat discouraged through the week by the current rumors of offers to one of our leading Boston foundry men of 100 tons fancy brand at $26 f.o.b. at shipping point, payable in 30 days; while holders of lots here have been particularly active in asking offers on round lots, in the face of the fact that the foundries are doing little, and only the most extravagant concessions would tempt a buyer. The market is in a very uncomfortable position. Between the reports from New York and the rumors on our streets, it would seem as though a general bear movement had started, and positive demoralization was ultimate. There have been no sales here during the week, the quotations remaining on wharf here No. 1, $29@$31; No. 2, $24@$27, and gray forge, $21@$24.

"BAR has sold along in a quiet way, the week's aggregate in tons being, from eight dealers, about 125 tons, on which probably a net profit of less than 50c. has been secured. This week fairly illustrates the current busi-

ness, a fair volume but insignificent profits, and, taking into account the bad debts and unforeseen contingencies, it is confessedly certain no money is to be made in jobbing bar iron. The market price is $58, and a more generous disposition on the extras, which cuts away the total earnings. Common iron is selling in a trivial way, a bar here and a bar there, and quotes from $52@$55 according to size."

The *Shipping List*, of Aug. 11, says:

"COPPER.—We continue to quote copper sheathing at 30c; bolts and braziers at 31c.; yellow metal sheathing at 22c.; and metal bolts at 28c per lb. Ingot is quite but firm at 23@23¼c. per lb. for small lots. In New York, there have been sales of about 300,000 lb. Lake, mainly at 23c. per lb.

"LEAD.—The transactions in pig have been in very small lots, and we have no sales to report. Prices nominally unchanged. Sheet and pipe are selling slowly at 7¼c. per lb., and other lead manufactures are held at steady prices.

"TIN.—There is a firmer feeling in pig tin, in sympathy with an advance abroad, and holders are asking 18½@19c., gold, for Straits and English.

"TIN PLATES.—Trade is quiet with no material change in prices. We quote currency rates as follows:—Charcoal I.C. at $10@10 25; coke at $7 75@8 50; and terne, including all kinds, at $7 75@10 75 per box."

Cincinnati. Aug. 10, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

CHARCOAL.

Hanging Rock, No. 1 Foundry	$26 00@27 00	—4 mos
" No 2, "	25 00@26 00	—4 mos
" Mill	24 00@25 00	—4 mos
Tennessee No. 1, Foundry	26 00@	—4 mos
Tennessee, No. 2, "	25 00@	—4 mos
" Mill	24 00@25 00	—4 mos
Missouri, No. 1, Foundry	.... @	—4 mos

STONE COAL.

Ohio, No. 1, Foundry	24 00@25 00	—4 mos
" No. 2, "	23 00@24 00	—4 mos
Ohio Mill	23 00@24 00	—4 mos
Missiouri, No. 1 Foundry	27 00@28 00	—4 mos
" No. 2, "	26 00@27 00	—4 mos
" Mill	26 00@27 00	—4 mos

CAR-WHEELS.

Hanging Rock, C. B.	40 00@50 00	—4 mos
Tennessee "	30 00@35 00	—4 mos
Missouri "	35 00@38 00	—4 mos
Alabama "	30 00@35 00	—4 mos

BLOOMS.

Charcoal	70 00@ 80 00	—cash

SCRAP IRON.

Cast	65c.@ 90	—cash
Wrought	1 00@1 40	—cash

Chicago. Aug. 9, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Our pig iron market remains quiet, the demand being confined to small lots. We quote:

No. 1 Coltness	$41 00@ ....
No. 1 Gartsherrie	40 00@ ....
No. 1 Summerlee	39 00@ ....
No. 1 Glengarnock	38 00@ ....
No. 1 Eglinton	37 00@ ....
Wareer's "American Scotch"	34 00@ ....
Massilon No. 1 Foundry	33 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	30 00@ ....
No. 2, " " "	28 00@ ....
No. 1 Mill	26 00@ ....
Union "A" 1 (Anthracite)	28 00@ ....
Union "B" 1 (Anthracite)	27 00@ ....
No. 1 Lake Superior (charcoal)	30 00@ ....
No. 2 Lake Superior "	29 00@ ....
No. 3 Lake Superior "	30 00@ ....
No. 4 Lake Superior "	32 00@ ....
Bessemer Steel Rails	73 00@ ....
New Iron Rails	50 00@ ....
Old Rails	28 00@ ....

Cleveland, Ohio, Aug. 9, 1875.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore:

FOUNDRY IRON.

No. 1, Lake Superior Charcoal	32 00@....
No. 2, " "	31 50@....
No. 1, Anthracite	29 50@....
No 2, "	27 50@....
No. 1, Bituminous foundry	29 00@....
No. 2, " "	27 00@....
American Scotch, No. 1, Cherry Valley	31 00@....
" " B—1, " "	28 50@....
" " No. 2, " "	27 50@....
No. 1, Massilon	30 50@....
B—1, "	27 50@....
No. 2, "	25 50@....

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal	31 00@....
No. 4 " " "	32 50@....
Nos. 5 and 6 " "	33 00@....

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal	31 50@....

FORGE IRON.

No. 1, Gray	24 50@....
White and Mottled	23 00@....

The Pig Iron market remains dull and unchanged. We can cite no changes in the quotations, nor do we find any indications of any immediate bettering of the market, although dealers are sanguine of an increased demand in the early future.—*Manufacturing and Trade Review.*

Indianapolis, Ind. Aug. 11, 1875.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Trade very dull at prices named below.

New Rails at mill	$48 00@50 00
Old Rails "	24 00@26 00
Hanging Rock Charcoal Pig No. 1 foundry	28 00@29 00—4 mos
" " " " " 2 "	26 00@28 00—4 mos
" " " " Mill	24 00@26 00—4 mos
Car Wheel C. B.	40 00, nominal.

STONE COAL.

Indiana No. 1 Foundry pig Red Short	24 00@26 00—4 mos
" 2 " " "	24 00@24 00—4 mos
" 1 Forge " "	....@ ....—4 mos
" 2 " " "	. .@ ....—1 mos
Ohio No. 1 Foundry pig Cold Short	25 00@26 00—4 mos
" 2 "	24 00@25 00—4 mos
" Mill	23 00@24 00—4 mos
" No. 1 Foundry, Neutral	26 00@28 00—4 mos
" No. 2 " "	25 00@27 00—4 mos

Merchant Bar	2¼c.—3 mos
1st quality C. H. No. 1 Boiler Plates, per lb.	5 c—3 mos
1st " Com. Sheet for No. 24, W.G. "	4 c.—3 mos
1st " Charcoal Sheet " " "	5½c.—3 mos
Best Bloom Galvanized Sheet, discount 20 per cent	—cash.
2d quality " " " 30 "	—cash.

f. o. b. in Indianapolis

Louisville, Aug. 9, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

The market is very dull, but without change in price. The usual time 4 months is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock Ores	$27 00@28 00
No. 2 " " "	25 00@26 00
No. 1, Mill, from " "	23 00@24 00
No. 1, foundry, from Alabama, Georgia and Tennessee ores	25 00@26 00
No. 2, foundry, from Ala., Geor'a and Tenn. ores	24 00@25 00
No. 1, Mill, from " " " "	23 00@24 00

HOT BLAST—STONE COAL AND COKE.

No. 1, foundry, from Hanging Rock ores	25 00@26 00
No. 2, " " " "	24 00@25 00
No. 1, Mill, " " " "	23 00@24 00
No. 1, foundry, from Ala. Ga. and Tenn. ores	25 00@26 00
No. 2, " " " "	24 00@25 00
No. 1, Mill, " " " "	23 00@24 00
No. 1 foundry, from Missouri ores	27 00@28 00
No. 2 foundry, from Missouri ores	26 00@27 00
Fo. 1 Mill, from Missouri ores	26 00@27 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores	35 00@40 00
" " Tennessee "	30 00@33 00
" " Alabama and Georgia ores	30 00@35 00
" " Kentucky ores	28 00@35 00

Pittsburgh. Aug. 9, 1875.

Specially reported by A. H. CHILDS, Esq., Commission Merchant for the sale of pig iron, blooms, ore, etc.

QUOTATIONS.

No 1. foundry	$27 00@28 00—4 mos
" 2, "	25 00@26 00—4 mos
Gray Forge	24 00@25 00—4 mos
White and mottled	22 00@23 00—4 mos
Hot blast charcoal	28 00@30 00—4 mos
Cold blast charcoal	35 00@40 00—4 mos

PIG IRON.—Trade in this important staple continues very quiet, as it usually is at this particular time, during midsummer, and we do not look for any very decided improvement this side of next month. However, the immediate future of the market is very uncertain, it hinges entirely upon the action of the mills; if they should continue to buy only as their necessities require, we need not look for any special activity during the next thirty or forty days, but if, on the contrary, some of them should contract for a two or three months' supply, we may look for a more active market, and very likely better prices. The general position of the market here and hereabouts continues favorable to the producers; the production is light as a very large percentage of the furnaces are out of blast. Stocks, as compared with this time last year, are very much reduced, and, as already intimated, the indications are favorable to an increased consumption with n the next few weeks; furthermore, the feeling prevails very generally, even among mill owners, that hard pan has been reached, that prices are not likely to go any lower. It is claimed by those who are in a position to know that even at the reduced cost of manufacture there is no margin for profit at current rates, which of itself is a very strong point in favor of higher prices; and furthermore, it is alleged that the cost of production cannot in the present condition of affairs be cut down any more than it is. On the other hand mill owners, while admitting what we have stated, cannot see their way clear to pay any advance, claiming, as they do that even at present rates the raw article is higher relatively than the product. Thus, as will be seen, the market is in a very unsettled and unsatisfactory condition, but there will doub less be a change one way or the other before long, so as to admit of an improvement in business; and, while we may be mistaken, we are inclined to the belief that the change will be favorable to the productive nterest.

MANUFACTURED IRON.—Trade is quiet, as it nearly always is during midsummer, but there is a better feeling than there was a week ago, in consequence of the decided improvement in the weather, which for some days past has been all that could be desired for gathering in the crops. While there is no question but a very large quantity of grain was destroyed in some sections of the country by the recent floods, there is no reason to believe that the loss was sufficient to affect the consumption of manufactured iron. On the contrary, farmers generally are in good shape, having had good crops for several years in succession, and furthermore realized remunerative prices for everything they had to sell; hence our manufacturers are hopeful of a good fall and winter trade, and there is no good reason at present why their expectations should not be fully realized. The general tone of the market is steady, but prices remain unchanged. We continue to quote bars at $2.25@$2.40, western classification.

PIG METAL SALES REPORTED FOR THE WEEK ENDING AUG. 11, 1875.

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

10 tons No, 2 foundry	$26 00—4 mos.
20 tons No. 2 foundry	24 00—cash.
390 tons gray forge	24 00—4 mos.
100 tons gray forge	23 00—cash.
100 tons gray forge, close neutral	23 00—4 mos.
100 tons white and mottled	22 00—4 mos.

COKE.

40 tons No. 2 foundry	$25 00—4 mos.
30 tons No. 2 foundry	24 00—cash
30 tons gray forge	24 00—4 mos.
40 tons gray forge	22 75—cash

—*American Manufacturer.*

San Francisco, Cal.

From the *Commercial Herald* of July 29, 1875.

We are again in receipt of very liberal supplies of pig iron. A portion of this sold prior to arrival. There is, however, considerable Scotch and English upon the market, of various brands and qualities. The imports for the week embrace the following invoices: per *City of Amoy*, 300 tons from Glasgow; 700 tons per *Lady Bl ssington* from Liverpool; 350 tons pig iron per *Criterion* from New York. The *Nereus*, from Liverpool, brought 1 700 boxes tin plate. The stock of manufactured iron and other metals is large, our wholesale houses carrying considerable assortments, and keeping prices steady for all desirable goods.

St. Louis. Aug. 11, 1875.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

We notice some increase in demand for pig iron, but only for small lots. Sales are very light, and there has been no change in prices since our last quotations.

BITUMINOUS.

Missouri, No. 1	$28@29	Massillon A No. 1	$36@37
" " 2	$26@27	" B " 1	$34@36
" " 1 Mill	$25@26	" " 2	$33@34

CHARCOAL—HOT BLAST.

Missouri, No. 1	$28@29	Hanging Rock, No. 3	$26@00
" " 2	$26@27	Tennessee, No. 1	$28@29
" Mill	$25@26	" " 2	$26@27
Hanging Rock, No. 1	$29@00	" Mill	$25@26
" " " 2	$27@00		

CHARCOAL—COLD BLAST.

Missouri Car Wheel	$37@40	Tennessee " "	$35@40
Alabama " "	$35@40	Hanging Rock "	$53@55

MISSOURI BLOOMS AND BILLETS.

Charcoal Blooms	$75@85	Hammered Billets	$90@100
Scrap "	$70@75		

METALS.

NEW YORK, Friday Evening, Aug. 13, 1875.

The wholesale trade is very quiet, although a fair jobbing business continues in some of the metals, and considerable firmness is shown in most departments. The majority of the dealers anticipate a fair fall trade, particularly with the West.

Our London correspondents, under date of July 30, say: "An excessive depression continues to be the characteristic of the metal market; the hopes entertained of a renewal of confidence in commercial circles do not seem at all likely to be realized. Further heavy failures have been announced. We are warned by those who should be well informed to be prepared for anything."

Gold Coin.—During the week past, gold has ranged from 112⅝ to 114 and closed at 113¼.

Bullion.—Fine silver bar is quoted at $1 22@$1 23, gold, per ounce, and fine gold bar at par ($20 67, gold, per ounce) to ¼ per cent. premium.

Copper.—The sales during the week have been about 250,000 lb. at 23c, at which price the market closes quite firm, with but little offering. The inquiry is not large, and sales are confined to the actual wants of manufacturers. There is no business doing in "futures." Chili Bars are quoted by cable, in London, at £81@£82, which is an advance of £2 since our last, which may be partially accounted for by the following:

ERNEST W. G. MURRANT, ESQ., of London, under date of July 29, says: "The feature of the week has been the rumored sale of two or three thousand tons of 'Wallaroo' to the French Government, it is said, at a trifling reduction from current rates. Nothing definite has yet transpired respecting this transaction, if transaction it be, but something of the sort has been looked for, as it would, of course, be suicidal to allow the stock to accumulate indefinitely. Chili; the charters from the West Coast for first half of July have been cabled as 2,300 tons, of which 650 tons are for the Continent, the remainder for England. The price of g.o.b's has receded nearly £2 per ton during the week, and the market remains quiet at £88 10/@£90 10/ for Wallaroo, and £77@£78 for Chili bars. The Board of Trade figures to end of June compare unfavorably with those of last year, the increase in the imports being about 5,000 tons, while the decrease in the exports is about 6,300 tons, making a total of about 11,300 tons of pure metal available in excess of that for 1874. The analysis of these interesting figures for the first six months of the last four years is as follows:

IMPORTS.

1872.	1873.	1874.	1875.
Tons.	Tons.	Tons.	Tons.
34,701	28,478	31,470	36,439

Average, 32 772 tons.

EXPORTS.

1872.	1873.	1874.	1875.
Tons.	Tons.	Tons.	Tons.
23,309	29,958	33,049	26,773

Average, 28,285 tons.

"The above figures will tend to explain the caution

which is exercised by all operators at the present moment. The transactions of the week were in Chili 500 tons g o.b's. and named marks at £77 10/@£79 10/ for cash and prompt. The importer has been asking £90 10/ for Wallaroo, but Australian is generally quiet."

Tin.—Straits in London is not so strong as last week, the latest cable information quoting at £78. In this market Straits and L. & F. are quoted at 18¼c. gold for jobbing lots, and Banca 23c. Tin plates show no change, they are in fair demand for jobbing lots, and quoted as follows: charcoal tins $8@$8 25, and ternes $7 25@ 7 50; coke tins $6 75@ $7, and ternes $6 25@$6 75, prices all gold.

The above-quoted gentleman says in relation to Tin: "The Dutch sale took place on Wednesday, when about 700 tons brought an average price of fl 48 35, equal to about £82 15/ in London. A further drop of about 20/ has taken place in Straits. No considerable demand has arisen at the reduced rate, and the article remains dull, with a downward tendency, all faith in it being apparently lost for the present. The week's sale consists of 200 tons Straits, and 120 tons Australian at 74/@ 78/ for cash, and forward delivery."

Lead.—The sales during the week have not been more than 100 tons of Domestic at 5·90c.@5·95c. gold, which are the closing quotations. Foreign is quiet at 6¼c., gold. The demand for Domestic lead is very light, and there are no indications of an early improvement. The supplies are very liberal and there is nothing to indicate that the legitimate demand will prevent an increase of stocks. With considerable stocks already in this market the inclination of prices is rather downward than upward. It is claimed that much of the lead already here is, and will be, firmly held, but with the prospects of continually increasing supplies, encouraged by an unnatural forcing of prices, it looks as though it would be difficult to do. The stock now held for an advance is about 2500 tons, and unless sold during the next sixty days, the prospects are, that it will have to be carried through the winter, when it will be necessary to take up the accumulation which will not probably be less than that of last winter; it will probably take considerable time to move so large a quantity at holders views.

Spelter and Zinc.—Domestic spelter is firmly held at 7½c., 30 days, less 1 per cent. for cash. Some small lots are occasionally offered at less, but large quantities are firmly held. Sheet zinc is quiet at at 8¼c.@9c. gold.

Antimony.—Our latest mail advices quote antimony in England at £56@£58. This market is quoted at 13c.@13¼c. gold.

Quicksilver.—This market is quoted at 75c., and San Francisco at 70c. gold per lb. The London quotation continues at £10 per flask of 75 lb.

The San Francisco *Commercial Herald* of July 29, 1875, says: "The export demand for the outgoing steamer for China is largely in excess of the supply, with sales at 70c. The *Montana*, for Mazatlan, carried but 100 flasks. The Mexican demand is surprisingly small."

FINANCIAL.

New York Stocks.

FRIDAY, August 13, 1875.

Various false rumors of failures of prominent banking houses and brokerage firms at the beginning of the week caused a ripple on the operations of a remarkably dull week at the New York Stock Exchange, prices of stocks, however, have generally remained firm, and in many instances we note a slight advance, the market closing with an improved feeling and exhibiting signs of reviving activity. Mariposa Land & Mining Co's. stock shows a decline as compared with our last, with sales of only 300 shares for the week. The tunnel was 1,011 feet in length on July 31st. The rock had changed to horn-blende, and was so hard that the steam drills made but little impression.

Bonds have been firm during the week, with moderate transactions.

QUOTATIONS AND SALES OF STOCKS:

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	—	—	270	
Consolidation Coal Co	—	—	47½	—
Spring Mt. Coal Co	—	—	67½	—
American Coal Co	—	—	60	—
Maryland Coal Co	—	—	19	—
Cumberland Coal and Iron Co.	—	—	116	—
Del., Lack., and West. RR. Co.	120¼	120	120	670
Morris and Essex RR	103	102½	103	457
New Jersey Central RR. Co.	110¼	109¾	110¼	223
Delaware and Hudson Canal Co.	120	119¾	120	394
Quicksilver Mining Co. pref'd.	—	—	21½	400
" " " Common.	16	15½	16	560
Mariposa Land & Min. Co. various.	11¾	11½	11½	300
St. Louis & Iron Mountain RR.	—	—	18	—
Lehigh & Wilkes-Barre Coal Co.	—	—	—	—
Total Shares sold				3004
Sales for the week previous				7·24
Decrease				4020

The following are the sales of bonds for the same period:

	Sales.		Price	
Ches. & O. R. R. 6s, Ex. con.	500	.....	—	@ 34
" " " coupon on	1,500	.....	—	@ 40
Central RR. of N. J. 1st Mtg. N.	—	.....	—	@109
" " " 1st Cons.	42,000	.....	106¾	@107
" " " Cons. Convt.	15,000	.....	—	@109¼
Am. Dock Imp. Bonds	—	.....	—	@ 99½
Del. and H. C., 1st Mtg. Reg. 1894,	—	.....	—	@107½
Del. and Hudson Canal, 7s, 1894,	—	.....	—	@107⅞
Del., Lack. & W. R. R., 7s, conv.	—	.....	—	@119
" " " " 2d Mtg.	—	.....	—	@111
Morris and Essex, 1st C. gold.	7,000	.....	—	@104¼
" " 1st m.	5,000	.....	113¾	@114
" " 2d m	2,000	.....	—	@106½
St. Louis & Iron Mount'n 1st Mtg.	5,000	.....	89	@ 90
St. Louis & Iron M'tn, 2d Mtg.	2,000	.....	50	@ 51
Total Sales	$ 80,000			

Quotations in the last column, in the absence of sales, represent the latest prices bid.

Philadelphia Stocks.

PHILADELPHIA, Aug. 13, 1875.

The Philadelphia Stock Market has been extremely dull during the week, the record of sales being less than for some time past. Prices, however, are maintained, the Stock Board closing firm yesterday. United N. J. RR. and Canal Co. was quoted at the close at 130¾ bid.

Baltimore and Ohio RR stock was quoted at the close of the market in Baltimore yesterday at 175 bid.

We note a sale of $1000 Susquehanna Coal Co's. bonds at 70.

The London *Times* of the 26th ultimo announces that "MESSRS. MCCALMONT BROTHERS & Co offer for subscription £200,000 or $1,000 000 gold, 6 per cent. consolidated mortgage bonds, to bearer, of the Northern Central Railway Company, situated in the States of Maryland and Pennsylvania The bonds are for £200 each, and the issue price is 87¼ per cent.

QUOTATIONS AND SALES OF STOCKS:

	Highest	Lowest	Closing	Shr's
Catawissa RR	—	—	19¼	—
" Preferred	43	42¾	42¾	18
" New Preferred	—	—	40	51
Huntingdon and B. T. RR.	—	—	7	—
" " " Pref'd.	—	—	14	125
Lehigh Valley RR. Co	62¼	62	62¼	523
Little Schuylkill RR	—	—	50	—
Minehill RR	—	—	54	1
Nesquehoning Valley RR.	—	—	56½	100
Northern Central RR.	—	—	29¼	—
North Pennsylvania RR.	—	—	52¼	8
Pennsylvania RR.	50¾	50¼	50¾	21889
Reading RR.	55⅛	55⅛	55¼	3523
Delaware Division Canal	—	—	—	—
Lehigh Coal and Nav. Canal.	51⅛	50⅞	51¼	8876
Morris Canal	—	—	50	—
" Preferred	—	—	127	—
Pennsylvania Canal	—	—	—	—
Schuylkill Navigation Canal	—	—	7½	—
" " Preferred	—	—	14⅜	40
Susquehanna Canal	—	—	—	—
Buck Mountain Coal Co.	—	—	—	—
Fulton Coal Co.	—		—	—
Locust Mountain Coal Co.			—	—
Westmoreland Coal Co	—	—	85	—
Cambria Iron Co	—	—	—	—
Crane Iron Co	—	—	—	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co.	—	—	72	—
Total shares sold				35,154
Sales for the week previous				70,387
Decrease				35,233

Closing quotations, in the absence of sales, represent the latest prices bid.

Sales of the various bonds for the period under review have been as follows:

	Sales.	Price	
H. and B. T. RR. 1st mortgage, 7s	—	—	@106
" " " 2d " "	2,000	—	@102
" " " 3d " cons	—	—	@ 56
Lehigh Valley RR. 6s, '98	3,000	—	@103¼
" " " 7s, 1910	1,000	—	@110½
" " " con. mtge. 6s reg.	4,000	—	@ 99½
North Penna. RR. 2d mtge. 7s,	3,000	—	@102½
" " " 1st mtge. 6s, '85	—	—	@101¾
Pennsylvania RR., 1st mtge. 6s, '85	1,000	—	@103¾
" " gen. " reg. 1910	1,000	—	@103¼
" " gen. " 6s	6,000	—	@101
Phil. & Reading RR. 6s, 43 & 44 '80	—	—	@100
" " " 7s, '93	—	—	@108½
" " " deb. bonds	1,000	—	@ 80¼
" " " G. M. 7s, cou. 1911,	—	—	@106½
" " " " reg. 1911,	3,000	—	@107¼
" " " 6s g. 1911	—	—	@106¾
" " new convertible 7s, '93	—	—	@106
Phil. & Reading C. & I. Co. 7s deb. '92	2,000	—	@ 83¼
" " " " 7s '92-3	—	—	@—
Lehigh Coal & Nav. Canal, 6s '84	2,850	—	@100¾
" " " RR., '97	500	—	@100¾
" " " '77	—	—	@ 95¾
" " " conv. '82	—	—	@102
" " " " g. '94	—	—	@106
" " " gold, '97	4,500	101¾	@101¾
Morris Canal, 1st mtge. 6s, '76	—	—	@101
" " 2d " '76	—	—	@100
" " boat, '85	—	—	@ 97¾
Penn. and N. Y. Canal, 7s	3,000	—	@105¼
Schuyl. Nav. Canal, mtge. 6s, '95	2,000	—	@ 79
" " " 2d " 1907	—	—	@ 81½
" " " 1st mtge. 6s c.	—	—	@ 79
" " " 6s '82	4,800	—	@ 81¾
" " " 6s boat and car, 1913.	—	—	@ 78
" " " 6s " " 1872,	3,618	98	@ 98¼
" " " div. scrip	3,060	95¾	@ 96
Susquehanna Canal, 6s '94	4,000	—	@ 77½
" " Pf'd. 6s	—	—	@ 85
Del. Division Canal 6s	—	—	@ 97
Chesapeake & Delaware Canal	3,750	—	@ 85
Total amount of sales	$60,078		

(BY CABLE.)

London.

FRIDAY, August 13th, 3:30 P.M.

The market closed steady for the following stocks at the prices annexed:

Pennsylvania R. R.	45¼
Philadelphia & Reading R. R.	50
United States 5-20s. new	104½
Consols for money	95¼

Bank of England rate of discount unchanged at 2 per cent.

Gold and Silver Stocks

SAN FRANCISCO, Aug. 11th, 1875.

The quotations of the San Francisco stock market are very irregular. Ophir, California and Cons. Virginia are considerably lower than reported in our last; with these exceptions, the general market exhibits an advance. The California and Consolidated Virginia Mining Companies are sinking a joint shaft which is being supplied with new pumping machinery and engines, the finest that have ever been built for the purpose on the Pacific Coast. This shaft has attained the depth of 561 feet. From recent surveys of the three bononza mines, it is estimated that the amount of ore in sight is worth six hundred million dollars. For the week ending July 31st the amount of ore extracted from the Cons. Virginia mine amounted to 4577 tons. This company will pay its usual monthly dividend of 10 per cent., aggregating $1,080,000, on the 12th inst.

Ore from the 200-foot level of the Imperial silver mine assays over $60 per ton, the main shaft is down 2200 feet, and it is stated that the ore is better than it has been for several years.

The Crusader Mining Company, recently organized, has begun operations upon the Crusader gold mine, in Mariposa County, Cal. The vein is 1,500 feet in length by one to two feet in width, carrying ores assaying $95 in gold per ton.

An underground survey of the Gila silver mine, Nevada, shows the amount of reserves now in sight to be worth over $780,000. The workings are now 130 feet deep, from which 610 tons of ore, yielding $183,000, have been extracted.

The following were the operations of the Northern Belle, silver mine for the week ending July 25:

	Tons.
Ore delivered at the mills	332
Amount of ore crushed	294
Ore remaining on hand	659
Bullion shipped	$25,916

Recent underground surveys of the Richmond silver mine, Nevada, made for the company, show the ore reserves now in sight to be worth nearly seven million dollars. The property is owned and operated by an English mining company.

The latest estimates of German and American authorities fix the value of the gold and silver produced by all the mines of the world from 1500 to 1874 as follows:

	Pounds.	Value.
Silver	364,000,000	$8,175,000,000
Gold	17,500,000	6,450,000,000
Total	381,500,000	$14,625,000,000

The total amount of treasure exports from San Francisco to all points from Jan. 1 to Aug. 4, 1875, was $40,043,612.28.

A company, styled the Tassajara Coal Mining Co. has been organized in San Francisco, with a capital of $1,000,000, in 100,000 shares of $10 each, to mine coal in Contra Costa County, California.

Quotations Aug. 11, 1875.

Sierra Nevada	19	Imperial	12
Union Consolidated	10	Yellow Jacket	98
Mexican	25	Kentuck	18
Ophir	69	Crown Point	35
California	66	Belcher	29
Virginia	333	Overman	75
Best & Belcher	62	Caledonia	29
Gould & Curry	25	Raymond & Ely	48
Savage	141	Meadow Valley	6
Hale and Norcross	62	Eureka Consolidated	49
Chollar Potosi	109	Eureka G. V.	5
Alpha	26	Silver Hill	—

Copper Stocks.

BOSTON, Thursday Evening, Aug. 12, 1875.

Specially reported by WILSON W. FAY & Co., Bankers and Brokers, Room 7, Traveller Building, 31 State street, Boston, Mass.

The Stock Market remains in the same dull condition as reported last week.

Allouez has advanced from 14¼ to 15¼ bid, $20 asked. The advance is attributed to a good supply of water, of which the mine has heretofore been deficient. (This Company had its annual meeting yesterday.) Calumet and Hecla is 154 bid, an advance of 50c. Cable Screw Wire has gradually receded from 4⅜ to 4¼ bid.

The following figures represent the ore product of reporting mines for July:

	Tons.	Pounds.
Calumet and Hecla	1078	1015
Quincy	136	1650
Franklin 60 tons 200 pounds } Pewabic 20 tons 1355 pounds }	80	1555
Allouez,* about	40	
Osceola †	20	

* Short of water.
† Idle 21½ days on account of water.

Quotations August 12, 1875.

	Closing Bid.	Ask'd.
Allouez	$ 15¼	$ 20
Calumet & Hecla	154	155
Central	31	—
Copper Falls	9	10
Dana	—	20 — 30
Duncan Silver	—	20 — 25
Franklin	13	14
Madison	—	20 —
Mesnard	—	50 1
Minnesota	2	2 50
National	3	3¼
Petherick	—	70 — 80

Pewabic	4⅞	5⅛
Quincy	40	41
Ridge	6½	7
Rockland	— 50	— 75
Superior	— 18	— 25
Am. Cable Screw Wire	4⅛	4¾

Gas Stocks.

NEW YORK, August 13, 1875.

A dividend of $5 per share is announced by Lawrence, Mass., Gas Light Company, payable on demand.

The City Gas Light Co. of Providence, R. I., had the annual meeting of its stock-holders August 11th.

The dividend paid by the Montreal City Gas Co. for the last six months was 4 per cent.

The Toronto Consumers' Gas Light Co. pays a regular quarterly dividend of 2¼ per cent.

We are indebted to the courtesy of Messrs. W. B. SCOTT & Co., Bankers and Dealers in Gas Stocks, No. 24 Pine street, New York, for much of the valuable information contained in the following table :

	Capital Stock.	Par-value.	Offered.	Asked.
Mutual Gas Light Co., N.Y. City	$5,000,000	$100	103	105
New York " " " "	4,000,000	100	155	
Metropolitan " " " "	2,500,000	100	158	165
Manhattan " " " "	4,000,000	50	295	300
Harlem " " " "	1,850,000	50	130	
Westchester Co. " New York.	466,000	100	100	
Brooklyn " " " Brooklyn..	2,000,000	25	242	
Citizen's " " " "	1,200,000	20	150	
People's " " " "	1,600,000	10	95	
Nassau " " " "	1,000,000	25	121⅛	
Metropolitan " " "	1,000,000	100	100	102
Williamsburgh " " ...	1,000,000	50	142	
Jersey City and Hoboken Gas Light Company, New Jersey .	386,000		160	
People's " " of J. C.....			65	
Hempstead " L. I., N.Y.	40,000	100		100
Jamaica, " " " "	25,000	100		100
Rochester " " "		100	50	
People's " " Albany,"	1,000,000	100	45	
Mutual " " Buffalo "	750,000	100	50	
Baltimore, Gas Light Company, Baltimore, Md.	2,000,000	100	190	
People's Gas Light Company, Baltimore, Md..			26⅛	
Hannibal Gas Light Company, Hannibal, Mo..	100,000	100	90	
Lewiston Gas Light Company, Lewiston, Me	400,000	100		80
Chicago Gas Light Company, Chicago, Ill.....	2,000,000	100	145	
Derby Gas Light Company, Derby, Conn.....		100	80	
Woonsocket Gas Light Comp'y, Woonsocket, R.I.	150,000	100	100	
Fort Wayne Gas Light Company Fort Wayne, Ind		100	105	
Northern Liberties Gas Light Company, Philadelphia.....		25	29⅛	
Portland Gas Light Company, Portland, Me.....	350,000	50	72	75
Hartford Gas Light Company, Hartford, Conn.....	700,000	25	40	43
Boston Gas Light Company, Boston, Mass	2,500,000		770	
Chelsea Gas Light Company, Chelsea, Mass.....	300,000		130	
Cambridge Gas Light Company, Cambridge, Mass	700,000		132¾	
Louisville Gas Light Company, Louisville, Ky.....			127	
Cincinnati Gas Light Company, Cincinnati, O.....			208	
Montreal City Gas Light Company, Montreal, Canada.....	1,440,000	40	127½	128¼
Toronto Consumers Gas Light Company, Toronto, Ont.....	600,000	50	130	
Halifax Gas Light Company, Halifax, N.S.....		40	147	

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. THE ENGINEERING AND MINING JOURNAL, containing the official reports of proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. Blank proposals for membership can be had on application to the Secretary.

IV. The second volume of Transactions has been mailed to all home members and associates not in arrears. Any member who failed to receive his copy will please notify the Secretary promptly. The Institute is not responsible for the loss of the volume in those cases where members have changed their residences and have omitted to inform the Secretary. Volumes I. and II. will be sent, post-paid, to non-members, at five dollars each.

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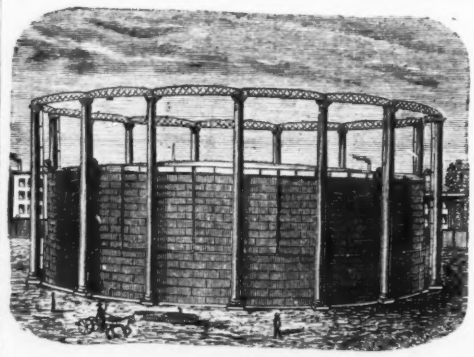

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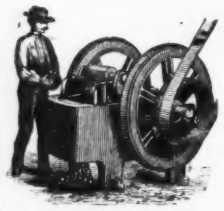

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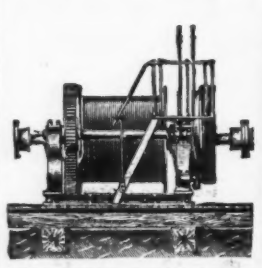

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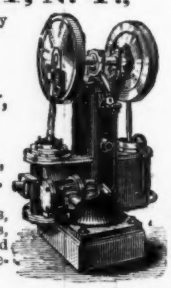

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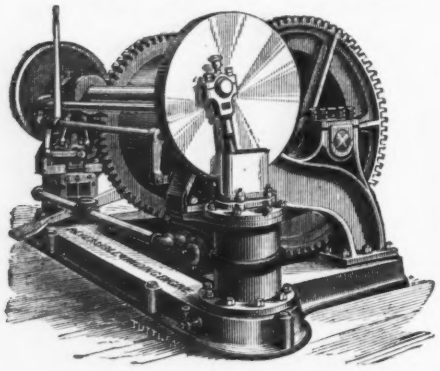

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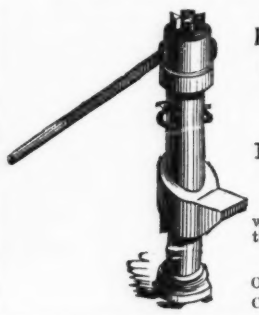

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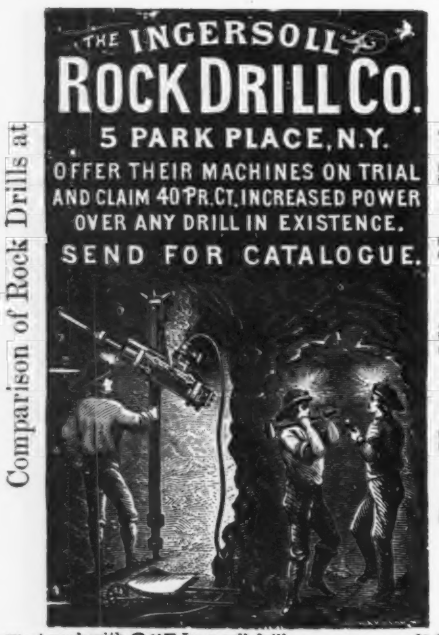
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